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ABSTRACT

Profiles for all curriculum research and development projects financed by the Schools Council and which have published reports or other material available to the public are provided in a loose-leaf format. The profiles are grouped under the following broad subject headings: English; Humanities; Languages; Creative Studies; Mathematics; Science; Interrelated Studies; Home, School and Community; School Organization; Staff and Resources; and Examinations. Within these groups, projects are arranged from those dealing with primary children, through middle school to secondary; projects dealing with the whole age range are grouped at the end of each section. Each profile includes the name and address of the director, the duration of funding, the age range concerned, and the grant provided. A summary of the area of inquiry, the procedures used, and the results obtained for research studies, or a summary description of materials produced in curriculum development projects is included. Where applicable, a list of published materials, including ordering information, is appended. Five projects financed wholly by the Nuffield Foundation but which are closely linked to Schools Council projects are included. There is a fold-out summary chart and a project index. (AL)

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FOREWORD

The curriculum research and development projects on which information is to be found in this binder include all those being sponsored wholly or in part by the Schools Council as at 1st April 1971. Space does not permit the inclusion of every small project financed since the Council's inception in 1964, but profiles are given on all projects whose work was finished before April 1971 and which have published reports or material that is now available to the public. Five projects financed wholly by the Nuffield Foundation but which link closely with the work of Schools Council projects have also been included for information.

These profiles are intended as a brief introduction to the work of the Council's research and development projects. There is always a danger in publishing such information that it will quickly become out-of-date and inaccurate, and we have tried to strike a balance between giving a lot of information of a somewhat ephemeral nature on the one hand, and giving sufficient detail of aims, objectives, procedure and materials on the other.

The project profiles have been arranged in the order given in Index 1. They have been grouped under eleven broad subject headings: English, Humanities, Languages, Creative Studies, Mathematics, Science, Interrelated studies, Home, School and Community, School organisation, Staff and Resources, and Examinations. Within these groups, projects are arranged from those dealing with primary children, through middle school to secondary; projects dealing with the whole age range coming at the end of the section. Index 2 lists the projects in alphabetical order.

A complimentary copy of the complete binder is being sent to all Local Education Authorities, HMIs, teachers' centres, colleges, departments and institutes of education. Additional copies of the set of sheets without binder are available from the Schools Council at a cost of 50p (70p including package and postage), [75p overseas], although as the information on them is not copyright there is no objection to sheets being photocopied locally by teachers' centres or schools.

It is intended to update the sheets annually, and any suggestions, corrections or amendments for the next edition should please be sent to Mrs. Gillian Box at the Schools Council.

Readers wishing to know more about any research or development project, or wishing to inspect published materials, films or research reports are invited to contact the Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL. The Centre is open to visitors each weekday from 10.30 a.m. to 5.00 p.m.

Please note that orders for publications referred to in the profiles should be placed through the usual channels and not sent to the Schools Council.

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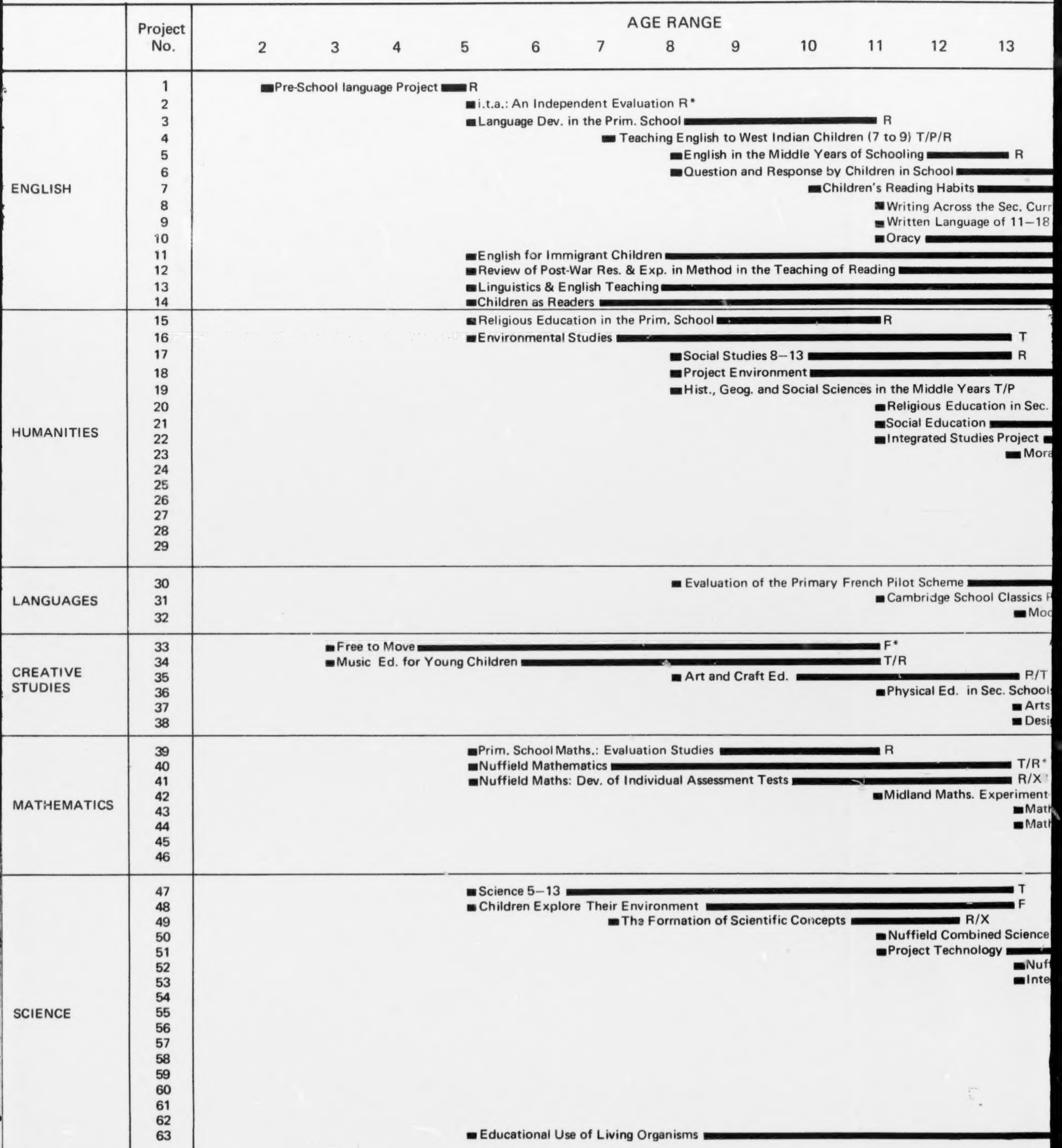

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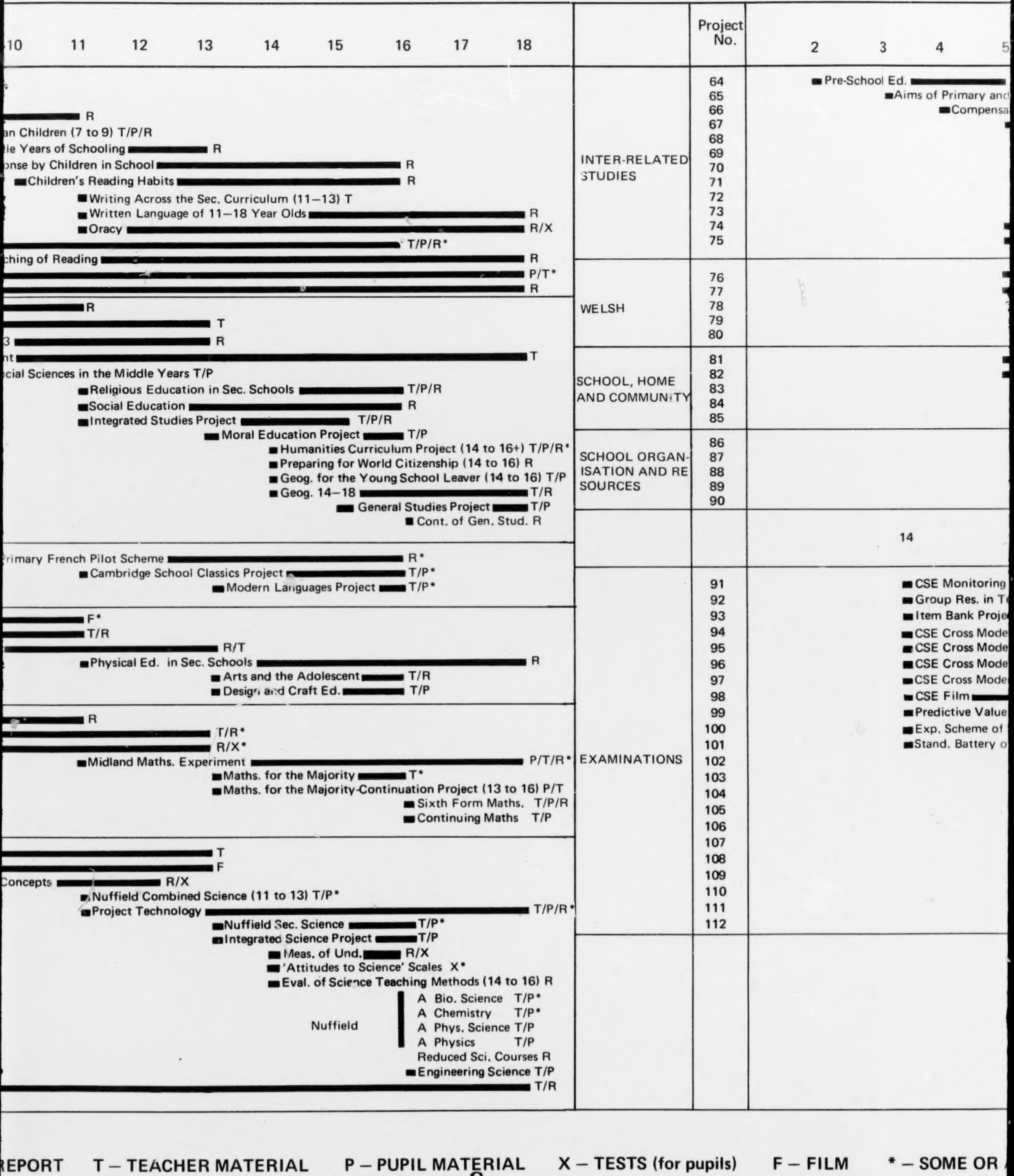

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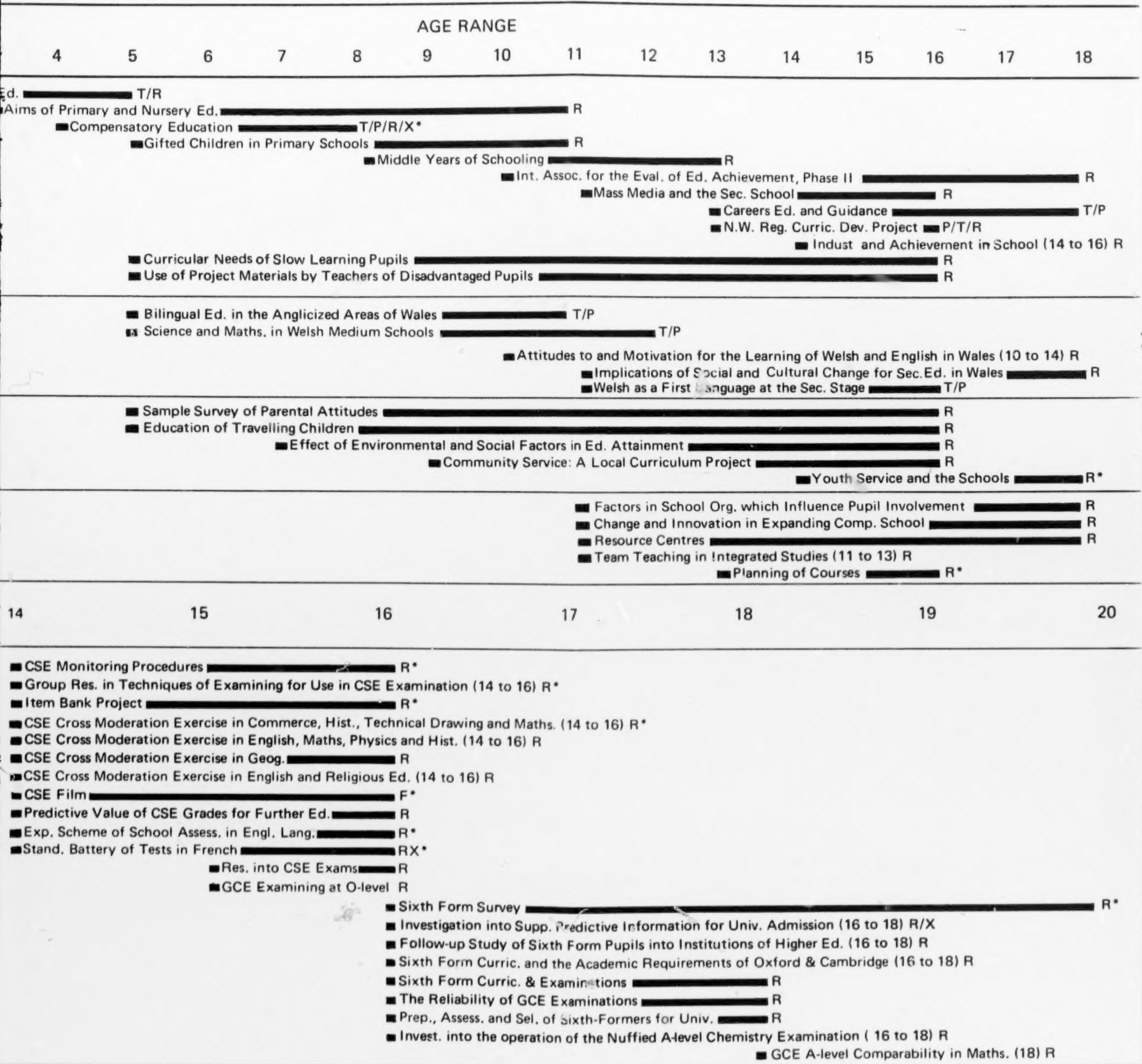

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Key to Type of Material.
P. Pupil Material.
R. Report.
T. Teacher Material.
X. Tests for Pupils.

PRE-SCHOOL LANGUAGE PROJECT

DIRECTOR: **Dr. Joan Tough**

LOCATION: Institute of Education, The University, Leeds LS2 9JT. **Telephone:** Leeds (0532) 31751

DURATION: 1971–1972 **AGE RANGE:** 2–5 **GRANT:** £8,000

AREA OF ENQUIRY

The proposal for a feasibility study in this area grew from the work of the Pre-School Education Project (q.v.) , the director of which, Miss E. M. Parry, had found a growing awareness among nursery school teachers of the importance of language teaching, but hesitation as to the direction it should take and the means it should employ. Dr. Tough had already been engaged upon a longitudinal study aimed at testing two hypotheses:

1. that differences in the language of children from linguistically 'favoured' and 'unfavoured' home backgrounds can be identified at the age of three
2. that the differences that would exist between these children at the ages of five and seven can be reduced by nursery education

In the course of the research a body of data and experience had been acquired, and this project was therefore established to enable Dr. Tough to test the feasibility of using her material as a basis for developing teaching guides to suggest to teachers:

1. How they can become more aware of what features in children's language to listen for
2. How and when the most profitable listening can be done
3. How children's language development can be recorded

PROCEDURE

It is intended to analyse the recorded language of children taking part in Dr. Tough's initial survey, and by use of video-tape recordings to study a variety of teacher strategies for initiating 'elaborating' talk through typical play and activity situations. An attempt will be made to describe the results in such a way that nursery school teachers will be able to work out the most profitable techniques and situations to use for their own particular purposes.

It is possible that the production of draft guides for teachers as outlined in the previous section may, if successful, point a need for a larger scale development project.

FURTHER INFORMATION is available from the project director, or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

APRIL 1971

2 R

i.t.a: AN INDEPENDENT EVALUATION

DIRECTORS: **the late Professor F.W. Warburton and Mrs. Vera Southgate**

LOCATION: Department of Education, University of Manchester, M13 9PL.

DURATION: **1965–1968** **AGE RANGE:** 5–8 **GRANT:** £3,600

AREA OF ENQUIRY

The Schools Council sponsored the evaluation of the available evidence relevant to the use of the initial teaching alphabet in the teaching of reading in schools at the request of the i.t.a. Foundation. The investigation incorporated the following broad lines of approach:

1. An evaluation of all the published research evidence on i.t.a. at home and abroad, including an appraisal of the methodology behind the results of experiments which had been carried out in both Great Britain and the U.S.A.

2. The collection and evaluation of the views of people who had been closely connected with the use of i.t.a. in such a way that this verbal evidence would represent a swathe cut right through every stratum of people involved in any way.

3. Suggestions regarding future research projects on i.t.a. which might be considered necessary.

WHAT IS i.t.a?

The Initial Teaching Alphabet, usually referred to as i.t.a. and originally named the Augmented Roman Alphabet, was devised by Sir James Pitman. He believed that the irregularities of the English spelling system constituted a major cause of difficulty for the beginning reader, and so his alphabet was aimed at simplifying the earliest stages of learning to read. This alphabet is intended only as an initial medium of instruction; once the learner has acquired fluency in reading simple material in i.t.a. he is expected to transfer to reading materials printed in traditional orthography (t.o.).

Pitman's general aim was to produce an alphabet in which each written symbol represented one, and only one, spoken sound. Forty-four written characters are represented, including twenty-four from the traditional alphabet.

The first experiment using i.t.a. with infants began in 1961 under John Downing at the Reading Research Unit, University of London Institute of Education.

RESEARCH PROCEDURE

The results of this investigation are published in *i.t.a.: an independent evaluation;* a shortened paperback version of this report is published as *i.t.a: what is the evidence?* The former is presented in three sections:

1. A brief enquiry into the extent and use of i.t.a., including information obtained by questionnaire from LEAs in England and Wales

2. Evidence from interviews on i.t.a. in practice, including chapters on collecting the evidence, interviewing procedures, infant teachers' general impressions of i.t.a., comments on reading, comments on writing and spelling, and comments on other aspects of i.t.a., evidence from schools involved in experiments, evidence from visitors to schools, parents' evidence, and summary of and conclusion drawn from verbal evidence

3. Evidence from research on i.t.a. in practice, including chapters on suggested principles of experimental design, summary of individual researches, summary of research results, and evaluation of and conclusions drawn from research evidence

CONCLUSIONS

With reference to part 1 above, by 1966, 9% of all schools in England and Wales containing infant pupils were to some extent experimenting with i.t.a. Verbal evidence in part 2 was found to be mainly favourable and frequently extremely favourable. The balance of research evidence in part 3 favoured i.t.a. as an *initial* teaching alphabet.

Both the verbal and the research evidence indicated that in the majority of schools infants using i.t.a. had learned to read earlier, more easily and at a faster rate than similar children using t.o. Verbal and research evidence showed, however, that after about three years of schooling, the reading attainments of many children taught by t.o. are approximately equal to those children taught by i.t.a.

All the research emphasized the complexity of learning to read, and verbal and research evidence pointed to the need for further research into the early stages of learning to read.

RELEVANT PUBLICATIONS

F.W. Warburton and Vera Southgate, *i.t.a.: an independent evaluation,* Murray and Chambers, 1969, £4.00.
Vera Southgate, *i.t.a.: what is the evidence?* Murray and Chambers, 1970, 45p.

FURTHER INFORMATION from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

APRIL 1971

LANGUAGE DEVELOPMENT IN THE PRIMARY SCHOOL

DIRECTOR: Mrs. Connie Rosen

LOCATION: Goldsmith's College, University of London, New Cross, London, S.E.14. **Telephone:** 01–692 5858

DURATION: 1969–1971 **AGE RANGE:** 5–11 **GRANT:** £11,500

AREA OF ENQUIRY

Through a survey of recorded good practice in primary schools, this project aims to provide information about the nature and operation of young school-children's language. One long-term aim is to encourage the setting-up in Teacher's Centres of groups to work on curriculum development in primary school English and language work and to supply discussion material to these groups.

PROCEDURE

During the first year of the project Mrs. Rosen visited many different schools in a variety of areas – rural and urban, working-class and middle-class. 19 of these schools have been visited several times to chart children's progress and pattern of work through a school year. By the end of the project it is hoped to have collected examples of good teaching practice in the development of children's language – talking, listening, reading and writing – including tapes of children's talk and examples of written work.

Two documents have been produced containing examples of childrens' creative responses to situations such as country walks, a train journey, looking at paintings, hearing a poem and examples of work done by children on their own. These were distributed to Teachers' Centres in May and October 1970 for group discussion. Mrs. Rosen has discussed these documents with a number of Teachers' Centres and will include teachers observations and recommendations in her final report.

FINAL PUBLICATION

It is hoped that a report of the project's findings will be published early in 1972. This may be accompanied by tapes and slides of children's work.

FURTHER INFORMATION is available from the project director, or after August 1971 from Mrs. Gillian Box, Schools Council, Information Centre, 160 Great Portland Street, London W1N 6LL.

TEACHING ENGLISH TO WEST INDIAN CHILDREN

DIRECTOR: Mr. J. Wight

LOCATION: Department of English and School of Education, The University, PO Box 363, Birmingham B15 2TT.
Telephone: Birmingham (021)–472 1301, Ext. 1054

DURATION: 1967–1972 **AGE RANGE:** 7–9 **GRANT:** £50,000

AREA OF ENQUIRY

Although the Council established a project at Leeds in 1966 to develop materials to teach English to the children of non-English speaking immigrants, the problems of West Indian children are substantially different in that their native language is English. This project was therefore set up in 1967, initially to conduct research into the linguistic, social and emotional problems of West Indian children and to establish guidelines for the development of materials.

A report on the initial research programme has subsequently been published as Schools Council Working Paper 29, *Teaching English to West Indian Children*. The following general conclusions were reached:

1. The materials should be for the lower junior age-range (7–9 years)

2. There are no grounds for concentrating on children recently arrived from the Caribbean, because the English-born children of West Indian parents have practically identical language needs

3. The materials should be designed for use with whole multi-racial classes, not for special withdrawal groups of West Indians

4. Because there is evidence that a significant number of teachers working with West Indians find additional problems of class management, the needs of the less experienced teacher would have to be borne in mind. This is especially important where innovatory techniques are being introduced.

PROCEDURE

During the research phase, the linguistic handicaps of West Indian children appeared to overlap in many ways with those of linguistically deprived English children. Much of the material is, therefore, designed with educational objectives that are equally valid for those children in the multi-racial class who are not West Indian, but whose language resources are poor. The two distinctive West Indian problems are:

1. The Creole dialect spoken at home impedes the children's acquisition of the English language skills required by the school – especially the productive skills

2. the training and expectations about child-adult and child-child relationships acquired at home produce for a significant minority of children quite severe adjustment problems in the classroom.

MATERIALS

These are comprised of four units:

The Dialect Unit: designed to counter the major effects of West Indian Creole on the ability to write standard English. This unit is not intended for use with the whole class. A simple diagnostic test has been developed to discover which children are in most need of help in this area. The general pattern is short, teacher-led sessions with a group of children, followed up by individual work by the children.

The Matrix Unit: designed to increase the skill of classification, which is central to the process of concept formation. The unit is for use with the whole class and teaching is centred on a series of Matrix sheets. These are grids of pictures arranged in columns and rows according to the classes to which the items in the pictures belong. The essential data on each new Matrix is introduced to the class and this is followed up by activities individually or in groups which enable children to extend and reinforce their learning. There is also a series of workcards with each Matrix to provide experience in writing.

The Communication Unit: designed to increase skill in oral communication through activities that focus attention on the act of communication itself, since during the preliminary investigations it was found that West Indian children have particular difficulty in describing things accurately and asking questions. The communication unit encourages pairs and small groups of children to practise these two activities orally with each other.

The Tape Playback Unit: designed to increase comprehension and communication skills through use of individualised tape programmes. The unit is comprised of a graded series of tapes, where although the language becomes increasingly complex, the response required is always simple. The tapes deal especially with the following themes:

a. Position
b. Comparison
c. Time
d. What happens if
e. The reason why
f. What does it mean

These materials will be accompanied by a teacher's manual, containing detailed instructions for use with the materials, and a section on the cultural and linguistic background of West Indian children in terms that will be useful to teachers of West Indian children of all age groups.

Publication is expected in 1972.

EVALUATION

All the materials are being tested in two classes in each of 30 schools in different parts of the country and will be revised in the light of these trials. Fourteen schools are using the materials as associate schools.

A member of the development team has been concerned with the collection of feedback on the effectiveness of the materials, the appropriateness of the initial objectives and some preliminary work on *how* the materials have their affect.

DIFFUSION

The final six months of the project – after the publication of the materials – will be devoted to follow-up and the dissemination of information nationally.

RELEVANT PAPERS AND PUBLICATIONS

J. Wight, 'Language Deprivation and Remedial Teaching Techniques', Second International Congress of Applied Linguistics, 1969.

J. Wight, 'Research and Development', *English for Immigrants,* OUP., Vol 2, No. 2, Spring 1969.

J. Wight, 'Linguistic and Non-Linguistic Teaching Objectives', *English for Immigrants,* OUP, Vol. 3, No. 1 Autumn 1969.

P. Edson and R.A. Norris, 'West Indian Children', *Practical Suggestions for teachers of Immigrant children,* Community Relations Commission, 1970.

'Questions about the West Indian Project', *Dialogue* 5, February, 1970.

Schools Council *Teaching English to West Indian Children,* (Working Paper 29), Evans/Methuen Educational, 1970, 38p.

J. Wight, Dialect in School' *Educational Review* Vol. 23, No. 3, June 1971.

R.A. Norris, 'Developing a Curriculum in English for West Indian Children' to be published.

FURTHER INFORMATION from the project director, or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

ENGLISH IN THE MIDDLE YEARS OF SCHOOLING

DIRECTOR: Mr. B. Newsome

LOCATION: Goldsmiths' College, University of London, New Cross, London S.E.14. **Telephone:** 01–692 7171

DURATION: 1970–1972 **AGE RANGE:** 8–13 **GRANT:** £18,000

AREA OF ENQUIRY

The aims of this project are to study the place of English in the curriculum between the years 8–13, based on a study of promising practice in schools. This will include an investigation of the language opportunities offered to children across the age range, including different reading, writing, dramatic and spoken activities, with some attention to the ways in which opportunities vary with environment, intake and school organisation.

It is envisaged that the final outcome of the project will be a report to include:

1. An analysis of promising practices in the light of what is known about the theory of language and learning. This would include consideration of questions ranging from ' how differentiated are the language abilities of children at the various stages of their education? ' to ' what roles do dramatic activities play in a child's learning? '.

2. An analysis of the way in which these practices prepare children for subject-centred studies. This would include asking what demands are made on the children's language as they move from subject to subject, and from primary school to secondary school.

3. A contribution to a general theory of curriculum in the years 8–13, with particular reference to the role language plays in learning.

PROCEDURE

During 1971 the project is making intensive studies in a range of primary, middle and secondary schools, from rural and urban areas, working and middle class districts and with differing types of curriculum. Data collected will include observation of lesson procedures, including situational and curricular contexts; examples of written work; tape recordings of oral and dramatic work; and statements of teachers' objectives. In the primary context it is hoped to draw on the work of the Language Development in the Primary School Project (q.v.). The project will also work in close co-operation with the Middle Years of Schooling project. (q.v.)

PUBLICATION

It is hoped to publish a research report for teachers, administrators, curriculum planners and research workers.

FURTHER INFORMATION is available from the project director or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

QUESTION AND RESPONSE BY CHILDREN IN SCHOOL

DIRECTOR: **Dr. W.P. Robinson**

LOCATION: Department of Psychology, University of Southampton, Southampton SO9 5NH
Telephone: Southampton (0703) 56331

DURATION: 1968–1971 **AGE RANGE:** 8–16 **GRANT:** £20,706

AREA OF ENQUIRY

The research enquiry arose from a belief that a considerable number of secondary school children do not show a lively and constructive curiosity about matters taught in school. One consequence of this is that they fail to benefit from the educational opportunities available to them. The project is developing measuring techniques, using them to survey the incidence and type of questioning behaviour of middle and secondary school children and investigating means of stimulating questions among less articulate children. It is hoped as a result to discover whether curiosity and the ability to articulate questions are related to social class.

PROCEDURE

The research team are examining a number of problems using a combination of laboratory-type experiments, and classroom and extra-curricular situations.

1. Does the posing of questions facilitate learning and retention? As a result, it is hoped that recommendations will be made about the structure of lessons in general and textbooks in particular.

2. The capability of children to ask questions relevant to the problem in hand is being examined in an attempt to specify which children have difficulty with what kind of question.

3. To be able to ask a question, does not guarantee it will be asked. Where under what conditions, of what kind of person is a child prepared to ask different types of question?

4. What is the incidence and type of questions that children typically have? How do these vary according to sex, intelligence, social class and environment?

5. The general determinents of curiosity are being examined.

6. A number of schools and teachers' study groups are co-operating in exercises relevant to the development of interest, curiosity and competence in questioning behaviour. These include an evaluation of the effects of a residential course in sporting and outdoor activities and of a residential weekend course on cross-cultural similarities and differences; comparative studies of interaction in teaching situations such as when the teacher is playing an active or passive role, or is absent; an investigation of curiosity about morality in school-based discussion groups; and participant observation in down-town Youth Clubs.

FINAL PUBLICATION

A research report will be prepared for submission to the Schools Council at the conclusion of the project.

FURTHER INFORMATION from the project director or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

APRIL 1971.

CHILDREN'S READING HABITS

DIRECTOR: **Mr. F.S. Whitehead**

LOCATION: Institute of Education, The University, Sheffield, S10 2TN. **Telephone:** Sheffield (0742) 26187

DURATION: 1969–1973 **AGE RANGE:** 10–16 **GRANT:** £21,000.

AREA OF ENQUIRY

The aims of the research are:

1. to investigate the amount of reading done by boys and girls of 10 to 16, and its nature in terms of different kinds of materials
2. to investigate the reading preference of boys and girls and the ways in which these change at different ages
3. to explore the qualities inherent in the most popular books which lead children to prefer them
4. to explore the relationship between the amount and quality of children's reading and various environmental factors in school and home

No large scale investigation of children's reading habits has been undertaken since A. J. Jenkinson's report in 1940 entitled *What do Boys and Girls Read?*

PROCEDURE

After a preliminary review of previous research in this field, the project team has been concerned with devising a written questionnaire which was adminstered in March 1971 to some 9,000 10 year-olds, 12 year-olds and 14 year-olds in a stratified national sample of 200 primary and 200 secondary schools. An additional questionnaire will be sent to primary school headteachers and secondary school heads of English departments asking for specified information about library provision and about the part played by literature and reading in the English syllabus. A pilot survey was carried out in Spring 1970 with 450 children to improve the questionnaire. The central part of the questionnaire asked the child to list the books he has chosen to read during the previous four weeks, from where he had obtained them and how much he enjoyed them.

During the school year 1971–72 the research team will conduct follow-up interviews with approximately 10% of the sample to study in greater depth why children choose or prefer their books, what factors influence the amount and quality of their reading, and how children view the role of reading in their own lives.

FINAL PUBLICATION

A research report will be prepared in due course for submission to the Schools Council.

RELEVANT PUBLICATIONS

Schools Council *English – a programme for research and development in English teaching* (Working Paper 3) H.M.S.O. 1965 17½p.

FURTHER INFORMATION is available from the project director, or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London, W1N 6LL.

APRIL 1971

WRITTEN LANGUAGE OF 11–18 YEAR OLDS

DIRECTOR: **Professor J.N. Britton**

LOCATION: Institute of Education, University of London, Malet Street, London WC1.
Telephone: 01–636 1500 (Professor Britton has recently moved to Goldsmiths' College, London).

DURATION: 1966–1971 **AGE RANGE:** 11–18 **GRANT:** £33,517

AREA OF ENQUIRY

The purpose of this development study has been to discover the nature of the various kinds of writing that teachers' assignments elicit, how these relate to subjects of the curriculum, and how individual patterns of development are established. The research has also attempted to discover what part writing plays in the learning process, in whatever form or in whatever area of the curriculum it occurs.

PROCEDURE

Stage 1 of the project entailed the study of the written work of 500 boys and girls in all the major subjects of the curriculum. The sample covered the full range of ability within the ages 11 to 18, and was drawn from 65 schools throughout England. Stage II was a four year follow-up study of the written work in the main subjects of about 250 boys and girls in five London schools - two direct grant and three comprehensive. The preliminary findings of the project indicate that progress in the skill of writing depends upon the ability to make increasingly fine distinctions with regard to the needs of the reader and to the purpose of the writing task. They suggest, further, that the average teacher, (for example in the course of his teaching of history or science or geography) tends to set a written task principally as a means of *testing,* and does not sufficiently recognize its potential as a means of *learning.* Again, a study of the functions of the written language in assignments reveals close relationships between distinctive writing abilities and learning processes of increasing maturity and complexity; and suggests the interdependence of writing, reading and speaking.

FUTURE DEVELOPMENTS

The research project's terms of reference do not provide for a consideration of the implications of its findings for teaching and examining. A three year development project entitled 'Writing Across the Secondary Curriculum' (q.v.) has thus been established at the London Institute of Education under the direction of Miss Nancy Martin to disseminate the research findings and, in conjunction with teachers of all subjects, apply these findings to the problems of the school and the classroom.

FINAL PUBLICATION

A final research report will be published in due course.

RELEVANT PAPERS AND PUBLICATIONS

Some of the findings are reported and discussed in the following articles:

Alex McLeod, 'This is what came out', *English in Education* 3.3. Autumn 1969. (See also the article by Dennis Watson in the same issue).
James Britton, 'What's the Use', *The context of Language* (University of Birmingham Institute of Education), Spring 1971.
Tony Burgess, 'Many Subtle Points', *Bulletin of the University of London Institute of Education,* No. 24, Summer Term 1971.
And in the following books:
D. Barnes, J.N. Britton and H. Rosen, *Language, the Learner and the School,* (Revised Edition), Penguin Books, 1971.
James Britton, *Language and Learning,* Allen Lane the Penguin Press, 1970.

FURTHER INFORMATION is available from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London, W1N 6LL.

April 1971.

WRITING ACROSS THE SECONDARY CURRICULUM

DIRECTOR: **Miss Nancy Martin**

LOCATION: Institute of Education, University of London, Malet Street, London WC1. **Telephone:** 01–636 1500

DURATION: 1971–74 **AGE RANGE:** 11–13 **GRANT:** £31,000

AREA OF ENQUIRY

This development project was established to test and develop the research findings of the development study in Written Language of 11–18 year olds (q.v.) and, in collaboration with teachers of all subjects, to apply these findings to the problems of the school and the classroom. It is hoped to produce exemplary materials and procedures that have been tried out in schools, together with the results of these trials. These may be published as a series of discussion documents for teachers, which will be concerned with the effective use of writing as a means of learning and teaching in all subjects of the curriculum for pupils of 11–13 years of age.

PROCEDURE

It is intended that schools should be related to the project on a voluntary basis and will fall roughly into three categories:

Experimental schools, in which a project team member will work with teachers in a group of associated subjects covering as much of the curriculum as possible. His intention will be to assist in the production of a language policy for the school as a whole and to advise on the organisational changes that make possible its implementation. This will involve assisting teachers to understand and assume responsibility for the effective use of the written language in their subjects: thus a wide range of language problems specific to different subjects (e.g. the precise role of generalisations in the teaching and learning of history) are likely to arise for discussion and practical trial.

Contact Schools. These will, on the whole, be schools visited for a short period for a specific purpose; for example, schools already embarked upon an experimental curriculum, such as integrated studies, might welcome assistance with linguistic problems arising from their work. There may also be schools in the vicinity of experimental schools, or individual teachers or subject departments with specific linguistic problems

Associated schools, with whom postal contact will be maintained. These schools will be able to apply to the project for materials that especially interest them.

MATERIALS

These will probably be in the form of discussion documents, as outlined above. They will attempt to set out in practical terms the operational implications of the research findings – implications regarding:

a) the uses of writing of all kinds (e.g. recording, reporting, story writing, note making, etc.) as a means of learning

b) the uses of writing of all appropriate kinds as a means of assessment

c) factors that affect the successful development of writing ability in all subjects

d) factors that affect the teacher's conception of his task, his objectives, and the means at his disposal, so far as writing is relevant to these

FURTHER INFORMATION is available from the project, or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

ORACY

DIRECTOR: Dr. A.M. Wilkinson

LOCATION: School of Education, University of Birmingham, P.O. Box 363, Birmingham 15.
Telephone: Birmingham (021)–472 1301

DURATION: 1967–1972 **AGE RANGE:** 11–18 **GRANT:** £15,750

AREA OF ENQUIRY

The project was established as part of the Schools Council's English research programme:

1. to construct measures of the two aspects of oracy – listening and speaking – appropriate to the age range 11–18, and

2. to relate the information provided by these measures to information about social, psychological and other linguistic factors.

The word 'oracy' was coined by a Birmingham research team in 1965 as a term to describe the skills of listening and speaking, and is parallel to 'literacy' which stands for the skills of reading and writing.

PROCEDURE

By 1969 research on the 'speaking' side was completed. Two experiments had been carried out. In the first to investigate the practical use of certain situations, six children of varying abilities were given 15 tests, ranging from telling a story to instruction. These were taped and used for discussion puposes. The second experiment was the construction of an oral composition scale in order of merit at CSE level, which could be used as a yardstick for teachers and examiners to assess spoken English.

Research in listening comprehension is currently under way, and three tests are being developed to measure various aspects of the listening skill: Test A for use with children of thirteen and over; Test B with younger children; and Test C for pupils of 17+. Test A is in six parts: a test of content, designed to test the ability of children to follow a piece of informal classroom exposition; two tests involving contextual constraints, which measure ability to infer missing words and sentences from what is actually heard; a phonology test, testing ability to understand differences in meaning brought about by different emphasis; a test of register, to measure the ability to detect changes in the appropriateness of the spoken language used; and a test of relationship, testing the ability to detect the relationship between people from the language they employ.

Test B is again a battery of sub-tests, containing two short tests of content, one involving contextual constraints, one a test of phonology, a test of register and a test of relationships.

Test C is a similar battery of sub-tests, but with no phonology test.

All three tests are in the form of tape recorded extracts of spoken English and a set of questions about them. They have been tested in a number of schools, revised and tested again.

It is hoped that Test A might prove to be a test of listening comprehension for CSE purposes. When the tests are complete and norms have been calculated, it will be possible for any teacher to use the tests and so obtain scores of listening comprehension which can be related to the established norms.

FINAL PUBLICATION

It is hoped to publish the tests and a research report.

RELEVANT PAPERS AND PUBLICATIONS

Andrew Wilkinson, *Spoken English*, University of Birmingham, Occasional Publication No 2, 1965.
D. Atkinson and A.M. Wilkinson, *The CSE: A Test of Listening Comprehension*, 1965. Unpublished report for the Schools Council
J. Skull and A.M. Wilkinson, 'Construction of an Oral Composition Quality Scale', *British Journal of Educational Psychology*, November 1969
A.M. Wilkinson and L. Stratta, 'The Evaluation of Spoken Language', *Educational Review*, June 1969
A.M. Wilkinson, 'Research in Listening Comprehension', *Educational Research*, Vol 12, No. 3.
A.M. Wilkinson and L. Stratta 'Listening Comprehension at 13+', *Educational Review*, June 1970.

FURTHER INFORMATION is available from the project director or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

ENGLISH FOR IMMIGRANT CHILDREN

DIRECTOR: **Mr. J. Ridge** **ORGANISER: Miss June Derrick**

LOCATION: Leed University, Institute of Education, Leeds LS2 9JT **Telephone:** Leeds (0532) 31751

DURATION: 1966–1971 **AGE RANGE:** 5–16 **GRANT:** £135,250

AREA OF ENQUIRY

In 1963 the School of English at the University of Leeds put to the Schools Council a proposal to provide practical help to schools admitting a large number of immigrant children with language difficulties.

A preliminary enquiry was set up:

1. to enquire into the extent to which local education authorities were aware of the factors involved, and

2. to establish the size of the immigrant intake in local authority schools.
The findings of this feasibility study are published in Schools Council Working Paper 13: *English for the Children of Immigrants.*

The survey provided ample evidence that development work should be both feasible and welcome, estimating for example that at that time (1965) some 44,000 children were unable to make normal progress in schools because they lacked sufficient English. A project was therefore established to provide teaching materials to help teachers enable pupils, whose first language is not English, to achieve an adequate command of English, so that they can play as full a part as possible in school and society.

PROCEDURE

The project team have developed materials in four main areas, together with a series of Handbooks dealing with some general aspects of immigrant education.

Introductory Course - Scope: Stage 1. - An Introductory English course for pupils aged 8 - 13 years.

On the assumption that it is first essential to teach children to speak, this course aims to help teachers give their pupils a sound elementary knowledge of spoken English, and then to start them reading and writing English. The materials are designed to help children become familiar with everyday aspects of English life as well as with a general school curriculum, and the course is structured upon the language children use and situations with which they are familiar.

The course is built around fourteen topics, and reference is made throughout to a group of children and their families who live in King Street, a multi-racial, urban area.

The materials include cut-out figures for use on magnet boards to help children recognise and talk about familiar objects and situations, and these are a versatile teaching aid for many kinds of language practice. The key to the course is in the teacher's book; this shows how the various components of the course relate to one another, and gives a detailed language scheme in which emphasis is placed on the structural patterns of English. Sections are also included on story telling, and on the initial teaching of reading and writing. Pre-reading apparatus, flash cards, work cards, work books etc. are included in the course and link with the *Scope* Readers. The language of the reading material is based on the scheme of oral work.

It is thought that most children will need at least two terms to master the language in the course, but as the time available for teaching non-English-speaking children will vary from school to school, the course has been flexibly designed for use in a variety of teaching situations. Fuller details of the materials are given in the section on published materials.

Continuation Course - Scope: Stage 2
This is a language development course for use in multi-racial classes with children aged 8 to 13. The materials are based on the study of three themes, 'Homes', 'Water' and 'Travel' and consist of a teacher's book, separate pupils' books and a set of work cards for each theme. Emphasis is laid on developing children's skill in using language for learning, thinking and communicating. The themes are the starting point for the children's work, and the materials are designed to provide special support for children from non-English-speaking backgrounds in their specific language needs.

The teacher's book is an essential guide to the course. It gives detailed suggestions for the use of the pupils' books and work cards; it lists language and vocabulary; it provides guidance in language-teaching techniques for use in the context of general class teaching; and it helps with class organisation where levels of ability and language development vary considerably.

Scope Senior Course
These materials are intended for recently arrived non-English-speaking immigrant pupils aged 14 or over, and at trial stage have been used in secondary schools, colleges of further education, evening institutes and a few adult groups. The interests and social needs of the students have been borne in mind and the materials comprise 2 teacher's books, 3 pupils' books entitled *We Live in England, Out and About in England* and *Ready for Work,* wall pictures and two tapes. The third book, which deals with finding jobs and starting work, was written for the project by members of staff at the Pathway F.E. Centre, Ealing LEA.

Infant Section

A report by Mrs. Diana Stoker was published by the Schools Council as Working Paper 31: *Immigrant Children in Infant Schools.* Its main theme was that in most cases it is necessary for non-English-speaking immigrant children in infant schools to be given specific help in learning English. If they are left simply to "pick it up" they may leave the infant school with an inadequate command of language for educational purposes.

This section of the project is not planning to produce materials, but rather a curriculum bulletin for teachers, suggesting ways in which the language development of immigrant infants may be stimulated and structured in the course of the normal activities in the infant classroom.

Scope Handbooks

A series of handbooks for teachers have been written for the project by specialist authors to provide information on various aspects of teaching English to non-English-speaking immigrant children. The first two titles are:

1. *The Social Background of Immigrant Children from India, Pakistan and Cyprus,* including information on the cultural background of Indian, Pakistani and Cypriot children. This is explicitly related to the school situation in Britain and will help teachers responsible for the reception and settling in of the children.

2. *Pronunciation for non-English-speaking children from India, Pakistan, Cyprus and Italy,* dealing with the major features of pronunciation which have to be taught and the techniques of how to teach them. The main difficulties experienced by speakers of other languages are also dealt with, and detailed practice material is included.

   Details of price etc. below.

PUBLISHED MATERIALS

These are published by Books for Schools Ltd., a consortium of six publishers. All materials are produced and distributed on behalf of the consortium, by the Longman Group Ltd., Pinnacles, Harlow, Essex, from whom inspection copies are available. Orders should be placed with the school supplier or a retail bookseller.

Scope Stage 1 1969

Teacher's Package	£26.00

Magnet board, magnets, magnet board figures, 10 wall pictures, 6 flash cards, 4 sets of picture cards, 2 sets of work cards (each containing 24 reading cards and 50 writing cards), 5 sheets of word slips, 1 sheet alphabetical cards, 1 7" record.

Teacher's book	£3.00
Pupil's picture book	£0.30
Pupil's work book	£0.24
Eight readers	£1.40 per set

N.B. The following items from the Teacher's Package are available separately:

Work Cards	£1.40
Word Slips	£0.50
Picture Cards	£0.40

Scope Handbook 1: The Social Background of Immigrant Children from India, Pakistan and Cyprus, Eric Butterworth and Donald Kinnibrugh, 1970, £0.60.

Scope Handbook 2: Pronunciation for Non-English-speaking Children from India, Pakistan, Cyprus and Italy, Elizabeth Rudd, 1971, £1.05.

It is hoped that further readers and a *Scope* story book will be published during 1971, and that *Scope Stage 2* and the *Senior Course* materials together with the bulletin on language work in infant schools will be published early in 1972.

EVALUATION

All materials were devised in consultation with groups of teachers, and all were tested in trial schools and revised before publication.

The teaching materials and the classroom methods have been assessed in various ways. Teachers in trial schools returned questionnaires to the project on the language scheme, the suggestions for teaching language, the suitability of the visual aids etc. Area meetings of trial teachers were organised, and visits were made to schools using the material.

TRAINING AND DIFFUSION

The project has already run a number of courses for LEA advisers and teachers on the purpose, use and methodology of *Scope.* A training course for LEA advisers and organisers and for college of education tutors is planned for July 1971. Courses have also been run in association with the Community Relations Commission. The project is currently preparing two films about the materials and a tape-slide kit will be available shortly for teacher trainers. These will all be available from the Schools Council Information Centre.

RELEVANT PAPERS AND PUBLICATIONS

Development of Project

Schools Council, *English for the Children of Immigrants* (Working Paper 13), H.M.S.O. 1967, 17½p.

J. Power *Immigrants in School.* Councils and Education Press Ltd. 1967 (A collection of articles which originally appeared in *Education,* December 1966. This gives a survey of administrative policies and is a most useful critique and commentary on Schools Council Working Paper 13).

S. Hagan 'At war with the Project', *The Guardian,* 1 July 1968.

N. Fitchett 'Children who don't speak English', *Dialogue* 1, September 1968.

J. Derrick 'The work of The Schools Council Project in English for Immigrant Children', *Times Educational Supplement,* 25 October 1968.

P.J. Singh 'Activity at the Centre', *Times Educational Supplement,* 25 October 1968.

M.R. Feeley 'The Schools Council Project in English for Immigrant Children', *Institute of Race Relations Newsletter,* February 1969.

N. Fitchett 'Scope for English' (A Review), *Education,* 14 February 1969.

J. Derrick 'The Schools Council Project in English for Immigrant Children', *Race,* vol. 10, April 1969.

E.J.B. Rose and associates, *Colour and Citizenship* (The Rose Report), O.U.P. for The Institute of Race Relations, 1969. (see pages 278–293 for an assessment of "The Leeds Project').

H. Lisser 'Knowing Jasbir', *Times Educational Supplement,* 4 September 1970.

Infant Immigrant Children

Schools Council, *Immigrant Children in Infant Schools* (Working Paper 31), Evans/Methuen Educational, 1970. 31p.

Linda Lambert and associates 'Immigrant Children in Infant Schools, 1–4; *Child Education,* October 1970, November 1970, January 1971, March 1971.

Eddie Garvie 'Language does not ' rub off'", *Times Educational Supplement,* 5 February 1971.

Language teaching, related to the Project's aims and materials

J. Derrick 'The Education of Immigrant Children', *Child Education,* April 1968.

Hilary Hester 'The Education of Immigrant Children - Teaching the English Language', *Child Education,* May 1968.

Diana Stoker 'The Education of Immigrant Children - Reading', *Child Education,* June 1968.

Elizabeth Rudd - 'The Education of Immigrant Children - Pronunciation' *Child Education,* July 1968.

Josie Levine 'Draw - Talk - Write', *English for Immigrants* No. 1, Summer 1967; 'Imitative Writing' *English for Immigrants* No. 2, Spring 1968; 'The Development of Written Skills 1', *English for Immigrants* Vol. 2 No. 2, Spring 1969; 'The Development of Written Skills 2', *English for Immigrants* Vol. 2 No. 3, Summer 1969).

(These are collected in one volume, ATEPO Booklet No. 2, *Developing Writing Skills).*

Hilary Hester 'Stories in Language Teaching', *English for Immigrants* Vol. 3 No. 1, Autumn 1969.

Hilary Hester 'Scope, Stage 2: Thematic Teaching', *English for Immigrants* Vol. 3 No. 3, Summer 1970.

Josie Levine 'Developing Use of English at a Second Stage of Language Learning', *Remedial Education,* October 1970.

BBC School Broadcast Bulletin *Hello! Hello!,* School Broadcasting Council for the U.K., November 1970. An account of how the BBC material (see below) was developed in close co-operation with the project.

Audio-visual

' Hello! Hello! ' A radio series for immigrant children of 8–11 learning English as a second language. Transmitted during 1970. 10 tapes of the broadcasts and a copy of the teacher's notes may be bought from BBC Publications, 35 Marylebone High Street, London W1M 4AA for £9.89.

A new skill. An 8 minute 16 mm. black and white BBC film, made in 1968, and part of a series entitled *In Our Midst.*

A 20 minute 8 mm. silent colour film made by a trial school teacher in Derby, showing the materials in use.

Two further films are in preparation, showing *Scope* and language work with immigrants, and these should be ready later in 1971.

FURTHER INFORMATION

Copies of all articles listed above including films and tapes, and all published material, are available for reference only in the Schools Council Information Centre.

Further information from Miss June Derrick (until August 1971) or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

REVIEW OF POST-WAR RESEARCH AND EXPERIMENTS IN METHOD IN THE TEACHING OF READING

DIRECTOR: Mrs. Pat D'Arcy

LOCATION: Institute of Education, University of London, Malet Street, London, W.C.1.

DURATION: 1967 – 1970 **AGE RANGE:** 5–18 **GRANT:** £2,600

AREA OF ENQUIRY

This project was originally established to review the whole field of research and experiment in English teaching since the war. This, however, was not possible in the time available and Mrs. D'Arcy therefore concentrated on the area of reading, taking into the account the reading responses of children from the pre-school to the post-sixth form stage, and of the methods by which reading is taught in infant, primary and secondary schools.

FINAL PUBLICATION

The survey entitled *Reading for Meaning* is expected to be published late in 1971. It is divided into the following sections:

A. *The pre-reading period,* including the function of books for the pre-school child; the 'world inside' (the function of phantasy in stories for under fives); the 'world outside' (recognising the familiar and exploring the unfamiliar); patterns of listening response; the need for more research.

B. *Reading readiness,* including possible origins of the concept; a summary of factors which appear to be involved; recent reservations about the reading readiness concept and the importance of intervention; a summary of the issues involved.

C. *Learning to read,* including research on learning how to read; research which has focussed on the learner – physical, mental, sociological and psychological factors; research which has focussed on school conditions including teachers; research which has focussed on what is to be learnt – decoding methods, teaching devices, reading schemes; a summary of factors which must be taken into consideration at the 'learning to read' stage.

D. *Reading Literature,* including aims of and attitudes towards the teaching of literature; patterns of interest; reading surveys which indicate children's preference patterns; analysis and assessment of reading response – what is involved for the writer as well as for the reader of literature. The final section includes techniques for the analysis and assessment of comprehension, and of literary appreciation, causes of misunderstanding for the young reader and suggestions as to what a teacher can do to encourage the full development of the pupil's response to literature.

RELEVANT PAPERS AND PUBLICATIONS

As the survey was intended to inform teachers about the range of books and published research articles available on various aspects of teaching reading, the report contains an extensive bibliography.

FURTHER INFORMATION is available from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

LINGUISTICS AND ENGLISH TEACHING: INITIAL LITERACY PROJECT

DIRECTOR: **Professor M.A.K. Halliday (until December 1970)**

PROJECT ORGANISER: **Mr. D. Mackay**

LOCATION: Communication Research Centre, Department of General Linguistics, University College, London, W.C.1. **Telephone:** 01–387 7050

DURATION: 1964–1971 (Schools Council support from 1967). **AGE RANGE:** 5–7 **GRANT:** £156,700 (both projects)

AREA OF ENQUIRY

This work began as the Nuffield Programme in Linguistics and English Teaching (1964–1967). Its brief was to look at the relevance of developments in linguistics for the teaching of English language to those for whom English was a mother tongue. When the programme was taken over by the Schools Council, the work was carried forward as linked projects, associated within the one programme, but aimed at different objectives. One, the Initial Literacy Project, was concerned with the initial teaching of reading and writing. The other, the 'Language in Use' Project, was concerned with pupils throughout the secondary school and beyond. (see Linguistics and English Teaching: Language in Use Project.

INITIAL LITERACY PROJECT

This group was concerned with the production of materials and a teachers manual for the teaching of initial reading and writing. These materials have subsequently been published as *Breakthrough to Literacy* and details are given below.

Some of the fundamental beliefs underlying the project's work are that:

1. Reading matter for children should, from the beginning, be linked to their own spoken language. The child's neighbourhood dialect may well be the only resource he brings to learning to read and write, and to present him with written language unrelated to his spoken language, is to cut him off from this. The language of most reading books, especially most first books, is very different from the spoken language of children and adults and includes language not found in normal written English.

2. The material that children are asked to read should be closely linked to their own interests and experiences and should include forms of imaginative writing. Thus the *Breakthrough* readers stem from the actual stories told by the children in the trial schools.

3. The teacher should be an active participant in the child's learning process, constantly offering the child guidance and help. Language, spoken and written, is highly patterned and the more of this patterning the teacher understands, the more effectively will she be able to help children to learn to read and write.

The project does not claim that its work is revolutionary, but rather that it has examined current practices and has attempted to work out why certain procedures are successful and others less so.

The heart of the materials is the 'sentence maker'. This is a folder made up of three leaves, two of which have a printed anticipated vocabulary (with a card insert for each); the third set is blank to enable personal items, available to the child, to be included. By using this, the child is able to master the composition and the reading of sentences without first having to master hand writing and spelling. He is thus able to practise and experiment with the written language as he does with the spoken.

Spelling is dealt with by means of a similar but smaller piece of apparatus called the 'word maker'. This is a folder containing printed symbols which the child can arrange to form words. The handwriting materials used in the trials are still being developed.

The project team do not state in the teacher's manual how long the work should take a child, nor at what age children should start. The materials are intended to be used individually by children working at their own pace.

The trial materials, although primarily intended for use with 5–7 year-old children in normal reception classes, have been used successfully in remedial situations with junior and lower secondary children, with a group of partially-hearing children, with junior E.S.N. children, with children in a training centre, and with adult illiterates.

All the materials have been tested by some 4,000 children in 80 schools and revised in the light of comments from teachers and children.

MATERIALS

Breakthrough to Literacy is published by Longman, Green & Co., Pinnacles, Harlow, Essex, from whom inspection copies are available. Orders should be placed with the school supplier or a retail bookseller.

Teacher's Materials

Teacher's sentence maker, stand, printed and blank word inserts	£3.75.
Teacher's magnet board kit: magnet board, magnets and figurines	£4.88 (inc. p. tax)
Teacher's manual	£1.25

Pupils' Materials

Sentence maker, stand, printed and blank word inserts	£4.25 per set of ten
Word maker, and insert letters	£3.00 per set of ten
Breakthrough readers:	
after school; big and little; the cat, the bird & the tree; a fish book	Yellow Set A 50p.
at school; my teacher; a rainy day; the wendy house	Yellow Set B 50p.
my mum; I fell over; a cup of tea; things I can do	Yellow Set C 50p.
The birthday party; Dressing up; Doctors & nurses; The loose tooth	Red Set A 50p.
In bed; The Christmas tree; Birds; Shopping	Red Set B 50p.
The lost girl; people in stories; My story; Our baby	Red Set C 50p.
Big Breakthrough Books:	
An abc for hungry girls and boys About the house	40p. the pair
Sally go round the sun and other nursery rhymes 24 varnished full colour cards	80p.
Sally go round the sun 12 inch LP record, containing spoken and sung versions of the rhymes.	£2.20.

Eight further readers and four collections of poems are in preparation and should be available later in 1971.

TRAINING AND DIFFUSION

The project ran a series of short conferences when the materials were published, but none are now available for schools wishing to buy materials. The teacher's manual is, however, to a large extent a self-training guide. Teachers wishing to know which local schools are using *Breakthrough to Literacy* should contact their LEA Primary School Inspector.

EVALUATION

Miss Jessie Reid of the University of Edinburgh, Department of Education, is currently evaluating the project's framework of aims, and a report is expected in due course.

RELEVANT PAPERS AND PUBLICATIONS

Frances Knowles, "A Breakthrough in initial literacy," *Dialogue* 3, June, 1969.

TELEVISION

Integrated Reading. A five minute clip from Tomorrow's World, March 1970 BBC2, 16 mm colour.

FURTHER INFORMATION

Copies of all items listed above, all published materials, and a tape/filmstrip sequence showing *Breakthrough* materials in use are available for reference only in the Schools Council Information Centre.

A further filmstrip is being prepared, and details will be available from Longman in the summer.

Further information from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL, or from Mr. D. Mackay, Centre for Language in Primary Education, St. Michael's House, 2 Elizabeth Street, London, S.W.1.

LINGUISTICS AND ENGLISH TEACHING: LANGUAGE IN USE PROJECT

DIRECTOR: **Professor M.A.K. Halliday (until December, 1970)**
Mr. P. Doughty (from January, 1971).

LOCATION: Communications Research Centre, Department of General Linguistics, University College, London, W.C.1.
Telephone: 01-387 7050

DURATION: 1964–1971 (Schools Council support from 1967) **AGE RANGE:** 11–18+ **GRANT:** £156,000 (both projects).

AREA OF ENQUIRY

This work began as the Nuffield Programme in Linguistics and English Teaching (1964–67). Its brief was to look at the relevance of developments in linguistics for the teaching of the English language to those for whom English was a mother tongue. When the programme was taken over by Schools Council, the work was carried forward as linked projects, associated within the one programme, but aimed at different objectives. One was concerned with the initial teaching of reading and writing, and was directed by David Mackay. Its work has been published as *Breakthrough to Literacy* (See information sheet Linguistics and English Teaching: Initial Literacy Project for fuller details). The other, *Language in Use,* was concerned initially with older secondary pupils, but in the course of development the materials proved that they were suitable for use throughout the secondary school and beyond.

THE LANGUAGE IN USE PROJECT

The Language in Use Project provides an approach to English language which puts into the hands of teachers a way of exploring language that does not require of them, or their pupils, the use of unfamiliar analytical procedures or technical terms. What is offered, however, does embody an objective and coherent view of the nature and function of language and its role in human existence that derives ultimately from the scientific study of language.

It offers a range of topics drawn from every aspect of language in use and presents each topic in the form of a plan for a sequence of lessons, usable individually or as part of a course of study which the teacher himself composes. Each topic is directed towards two basic goals: an increase in the student's awareness of the nature and function of language through the exploration of some aspect of language in use and a development of his ability to handle both spoken and written English. The sequence of activities recommended for the exploration of each topic enables the pupil to work in such a way that the exploration itself leads the way to a recognisable growth in competence.

The 110 Units, the plans for the lesson sequence, are arranged in ten themes:

Part I, 'The nature and function of language', contains two pairs of related themes, 'Using language to convey information' and 'Using language expressively', which together are concerned with conveying the message: 'Sound and symbol' and 'Pattern in language'. Part II, 'Language and individual man' contains three themes, 'Language and reality', 'Language and culture', and 'Language and experience'. Part III, 'Language and social man' again contains three themes, 'Language in individual relationships', 'Language in social relationships', and 'Language in social organisations'.

In the extensive field trials, the units were successfully used with every age group from 10 to 18, and also with students in colleges of education and further education. This was possible because they are written as outlines for the teacher from which he can derive lessons that fit the particular needs of his own class-room. While they make concrete suggestions about what can be done, they do not prescribe the degree of explicit comment to be required of the pupil.

LANGUAGE IN USE IN THE ENGLISH DEPARTMENT

Language in Use is designed to fit into many different patterns of work. It offers an approach to one key aspect of English, but it is not in any sense a 'complete English course'. It can be used as a store of good ideas and good practice that can be drawn upon when and where the work of a class makes it desirable, or it can provide the basis for a planned course in exploring language. A particular feature of the material is the degree to which it makes use of class-room procedures, like the use of group work, that are familiar to experienced teachers, but present problems for the inexperienced.

As it is designed for the teacher himself, and should be used to contribute to the on-going pattern of work with each class rather than as an independent timetable 'subject', *Language in Use* makes no special demands as far as organisation, timetabling or staffing are concerned.

PUBLISHED MATERIALS

Language in Use will be published in a loose-leaf binder by Edward Arnold, 41 Maddox Street, London, W.1., in September, 1971 at approximately £1.50. An accompanying tape will be available early in 1972. The paperback *Exploring Language* will be published early in 1972.

EXAMINATIONS

Language in Use is not directed towards preparation for public examinations in any formal sense. All the activities involved, however, have a cumulative effect upon the capacity of the pupil to carry out the specific language tasks required by existing examinations in English language. The flexible design of the material and the degree of initiative left to the teacher, makes it particularly suitable as a basis for CSE Mode III courses.

TRAINING AND DIFFUSION

Language in Use is designed to be its own instructor. It is written with the minimum use of technical terms and what is needed to explain the relevance of a theme to the whole or the specific purpose of a unit is written into the text. A paperback, *Exploring Language,* is designed to carry the interested teacher further in discovering for himself the details of the thinking which underlies the material, but it is not a necessary preliminary to using the material.

The trial was set up in such a way that there would be a nucleus of users in many parts of the country, associated with a co-ordinator who is usually a college of education lecturer or a local authority adviser. During the current academic year, *Language in Use* study groups have been meeting, independently of the team, and are still in the process of being set up. Details of these from Mrs. Gillian Box at the Schools Council.

EVALUATION

Formative evaluation was undertaken through the use of questionnaires, visits and observation by the team, and the detailed reports of the co-ordinators. Schools and colleges testing materials included selective, comprehensive, and secondary modern; city centre, suburban, new town, and rural. Through contact with the Home Office, a number of approved schools were also included, where the material proved useful with pupils very hostile to conventional patterns of schooling.

RELEVANT PAPERS AND PUBLICATIONS

Three papers from a series of ten entitled *Programme in Linguistics and English Teaching,* Longman, Green & Co., 1968:

1.	P. S. Doughty	*The Relevance of Linguistics for the Teacher of English*	50p
4.	P. S. Doughty	*Current Attitudes to Written English and their Implications for the Teacher of English*	30p
5.	P. S. Doughty	*Linguistics and the Teaching of Literature*	50p

A second series will be published by Longman in 1972, and four papers by Peter Doughty and Geoffrey Thornton will take further some of the topics in *Exploring Language.*

FURTHER INFORMATION Published materials and papers listed above are available for reference only in the Schools Council Information Centre. Further information from Mr. Doughty at the Department of General Linguistics, University College, London, or from Mrs. Gillian Box, Schools Council Information Centre, 160, Great Portland Street, London, W1N 6LL.

CHILDREN AS READERS

DIRECTOR: **Mr. D. Barnes (until July 1970)**
Mr. J. Mulford (since August 1970)

LOCATION: School of Education, University of Bristol, 19 Berkeley Square, Bristol BS8 1HF
Telephone: Bristol (0272) 24161, ext. 239.

DURATION: 1968–1973 **AGE RANGE:** 5–18 **GRANT:** £16,309

AREA OF ENQUIRY

The project was set up at the instigation of the National Association of Teachers of English with the aim of involving as many teachers as possible in the consideration of the roles of literature in the curriculum, by setting up study groups to consider the teaching of literature in both primary and secondary schools.

PROCEDURE

The project is organised by a voluntary panel and a full-time director. The project now has some 50 groups of teachers, who work in their spare time. Each group is responsible for determining the nature of its own study – the function of the control panel being to advise and co-ordinate. In an introductory pamphlet *Children as Readers,* put out by the project in 1968, it was suggested that groups should work towards producing some combination of a) collections of material, b) theoretical statements; c) practical advice; d) reports of experimental studies. An appendix to this bulletin also suggested areas for study, including the choices, attitudes and responses of the child in situations where the influence of the teacher is minimal; the role of the teacher in the classroom; the behaviour and attitudes of the teacher; special areas of literature, such as drama. Groups have proceeded in a variety of ways: members may read papers, record lessons in which different teachers in different classes have taught the same poem, discuss approaches to a novel. One group of teachers has been concerned with children who cannot or do not read, another has analysed recordings of children discussing a novel without a teacher present. Some groups have sent out questionnaires on children's reading habits; others have investigated attitudes to certain books.

DIFFUSION AND TRAINING

Two week-end courses to train potential group-leaders were held in the first year. Since then, a number of one-day regional conferences for group representatives have been organised by panel members. Information on further meetings and conferences may be obtained from the project.

RELEVANT PUBLICATIONS AND PAPERS

Children as Readers, 1968. Obtainable from the project.

Literature in and out of the Classroom. Out of print

Bulletins are distributed to participating teachers. Nos. 1–6 are out of print. From No. 7 (March 1971), bulletins will be circulated within the project twice a term.

Douglas Barnes, 'The Roles of Literature in the Curriculum of the Primary and the Secondary School', *English in Education,* Vol. 2, No. 1.

Martyn Richards, 'Children as Readers', *The School Librarian,* Vol. 17, No. 3. September 1969.

FURTHER INFORMATION is available from the project director, or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

APRIL 1971

RELIGIOUS EDUCATION IN THE PRIMARY SCHOOL

DIRECTOR: **Mr. C. M. Jones**

LOCATION: Institute of Education, University of Leeds, Leeds LS2 9JT **Telephone:** Leeds (0532) 31751

DURATION: 1960–1971 **AGE RANGE:** 5–11 **GRANT:** £10,750

AREA OF ENQUIRY

This survey has four main aims:

1. To summarise and critically evaluate recent literature and research on religious education, especially in the primary field, extracting topics calling for further investigation.
2. To survey the religious education in selected primary schools, and by consultation and free written comments by Heads and teachers attempt a clarification of aims.
3. To evaluate the results of the survey, drawing attention to outstanding examples of religious education judged in relation to stated aims.
4. To produce a document that will be of practical use to both specialist and non-specialist teachers and to Heads of schools and others responsible for the conduct of worship in school.

PROCEDURE

A sample of 304 primary schools in England and Wales considered to be 'notable for the high quality of their religious education' were nominated by LEAs, HMIs, colleges of education and church schools with and without teachers with specialist qualifications in religious studies.

Each of these schools completed a questionnaire, designed by the project to enable the team to select 56 schools in which to conduct depth studies. The questionnaires elicited not only factual information, but the views of head teachers on the aims of religious education and its place in the primary school, and their aims within their own schools. The 56 schools have all been visited for a two day period by a member of the project team. Information collected on these visits has covered the daily act of worship, other special services and classroom prayers; formal and informal approaches to religious education and the integration of religious education with other work in the school, such as art, music, drama and creative writing; moral and social education; community service; the influence of the home, Sunday school and the church on children and the extent of co-operation between these and the school. The project team have also looked at staff-pupil relationships and the effect of a teacher's religious experience upon his work in a school.

In addition to the school survey, the project team have undertaken an appraisal of recent research and literature and its impact upon religious education in primary schools.

FINAL PUBLICATION

It is hoped to produce a report which will enable teachers to understand something of the educational and theological assumptions underlying the new approach to religious education in the primary schol, and offer guidance to local education authorities, colleges of education, and those responsible for the in-service training of teachers in primary schools. It will also inform those responsible for religious education in the secondary schools about the new religious education in the primary schools, and so, it is hoped, foster a better understanding and a greater degree of co-operation between teachers in the two kinds of schools.

FUTURE DEVELOPMENTS

The Schools Council has granted a small sum of money for a 'caretaker project' to run from April 1971 until March 1972, by which time a development project in religious education in the primary school may have been approved.

RELEVANT PAPERS AND PUBLICATIONS

John Conder, "Religious Education in the Primary School: An Introduction", ATCDE Divinity Section *Bulletin,* No. 8, November 1969.
Carol Mumford, 'the fourth 'R'?', *Dialogue* 6, August 1970.

FURTHER INFORMATION is available from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

ENVIRONMENTAL STUDIES

DIRECTOR: Mr. M. Harris

LOCATION: Cartrefle College of Education, Wrexham, Denbighshire. **Telephone:** Wrexham (0978) 2150

EVALUATOR: R.W. Crossland, Institute of Education, Manchester.

DURATION: 1967–1971 **AGE RANGE:** 5–13 **GRANT:** £63,700

AREA OF ENQUIRY

The project was established to help teachers use the environment systematically to provide experiences which help the progressive development of a child's skills and concepts throughout his primary school career and beyond. Its aims are:

1. to examine and define the value of environmental studies for children throughout the age range 5 to 13, in terms of concepts, skills and attitudes to be developed

2. to suggest to teachers how they can recognize and use features in their own environments (be they inner-city, suburban, village or country town) to provide carefully graded opportunities for their pupils to acquire these skills, concepts etc

3. to study and describe the conditions which appear to be necessary for the successful adoption of environmental studies in schools, the organisational and staffing problems involved and the support which schools use from LEAs and other bodies

The project team have defined environmental studies not as a 'subject' with its own body of factual information but as a way of learning through organized enquiry. They define it as 'an approach, through activities based on the child's physical and social environment, which leads to the progressive development of attitudes and skills required for the observation, recording, interpretation and communication of scientific, historical and geographical data . They would stress that the approach cannot be undertaken if the study is made on the basis of rigidly differentiated subjects, but it would be incorrect to think that the approach is antagonistic to the pattern of subject-divisions, so long as these are not insisted on at too early a point in a child's development.

PROCEDURE

The project's work has fallen into three phases. During the first year, 70 primary and secondary schools from all authority areas in Wales, Monmouthshire and Shropshire, with experience of working with the environment, were selected to work with the project team. The schools were not presented with a model of how environmental studies 'ought' to be conducted, but were asked to continue with their usual work. As a result of observation of these schools, discussions with staff, and an integration of the good practice observed with some of the theoretical ideas worked out by the project team, two draft guides were produced – one describing the value of environmental studies and the implications for heads and staff, and the other consisting of a series of case studies chosen to illustrate different degrees of commitment to the approach.

During phase II the project worked with a further 120 schools who had little or no previous experience of environmental studies. Teachers involved attended briefing conferences where they studied the two draft guides, and once back in their schools the project team kept in close touch with their progress. Two further guides were produced – *Starting with Maps,* describing mapping techniques that are progressively suited to children at different stages of development; this was felt to be one way of starting an environmental study and included advice on techniques and organization; and *Starting with Rocks,* suggesting ways in which teachers can help children to develop scientific skills and understanding through the study of rocks, fossils and minerals. In addition, and following an experiment by teachers at Merthyr Tydfil Teachers' Centre, notes were prepared on the production of local resource materials. A number of teachers' centres have been involved in the production of materials on their own particular area, for example, local historical documents, photographs etc.

Phase III has involved the dissemination of project materials to a further 48 schools in 13 local education authorities in England. These schools, experienced in the use of the environment with children, are examining and commenting upon the feasibility of project suggestions on organisation of studies in their particular situations.

All four guides have been revised in the light of phase II and III trials.

PUBLISHED MATERIALS

The four teachers' guides will be published by Rupert Hart-Davis late in 1971.

These will be:

1. A general introduction to environmental studies, outlining the value of the approach; suggesting ways in which activities might be arranged to help the progressive development of skills; discussing problems of implementation in primary and secondary schools and the kinds of support that are needed. December 1971.

2. A book of case studies, prepared by teachers taking part in the project and arranged to show how schools can successfully exploit very different environments to achieve similar ends. September 1971.

3. *Starting from Maps,* a development of *Starting with Maps.* September 1971.

4. *Starting from Rocks,* a development of *Starting with Rocks.* December 1971.

The project is also preparing three 16 mm colour films:

1. A 15 minute case study entitled *Crossroads,* dealing with a primary school class working at a road junction in a city area

2. A 15 minute case study entitled *The Park,* outlining a variety of work arising in a park in a small town

3. A 25 minute film, with examples from schools, outlining the environmental studies approach

Details of availability will be announced shortly.

DIFFUSION AND TRAINING

A number of conferences for primary school heads and advisers interested in the project's work have already been held, and three final conferences are planned at Cardiff (from 19th – 22nd April), Furzedown College, London (6th – 9th July), and Didsbury, Manchester (13th – 16th July). These final conferences are aimed chiefly at colleges of education and local advisory staff, including wardens of teacher's centres. It is through LEAs and colleges that further diffusion through initial and inservice training will be developed.

EVALUATION

The purpose of the evaluation is to provide an impartial account of what the environmental studies approach is, what it can achieve, how conditions (which vary from school to school and class to class) affect performance, and what are its possible weaknesses.

This is divided into three complementary studies: 1) A Study of Outcomes, concerned with what changes are produced in the children who have experienced this way of working; 2) A Study of Contributing Factors, aimed at assessing how each of the many variables that may be relevant is related to performance by teachers using the approach; 3) A Study of Acceptability, investigating how the approach has been received by teachers to whom it has been introduced.

RELEVANT PAPERS AND PUBLICATIONS

'Teach-in at Abergavenny', *Dialogue* 1, September 1968.
'The Environmental Studies Approach', *Dialogue* 6, August 1970.
M.I. Harris, 'The Curriculum Development Project on Environmental Studies,' *Society for Environmental Education Bulletin,* occasional paper 3.
Environmental Studies 5–13. An introductory leaflet, free from the project or the Schools Council.

FURTHER INFORMATION is available from the project director, or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

SOCIAL STUDIES 8–13

DIRECTOR: Dr. D. Lawton

LOCATION: Institute of Education, University of London, Malet Street, London, W.C.1. **Telephone:** 01–636 1500

DURATION: 1968–1970 **AGE RANGE:** 8–13 **GRANT:** £12,000

AREA OF ENQUIRY

This research project was set up following a conference on the Middle Years of Schooling held at Warwick University in 1967. A report of this conference is published as Schools Council Working Paper 22: *The middle years of schooling from 8 to 13.* One of the topics discussed was the place of social studies in the curriculum of 8–13 year-old pupils, and it seemed to be generally agreed that the new knowledge included in the social sciences was often completely neglected by schools.

The project's brief was to describe and analyse examples of interesting work in schools intended to promote an understanding of social relationships and concepts, even if the work was not specifically labelled 'social studies', and to assess the need for the establishment of a development project to produce supporting materials for teachers.

PROCEDURE

The project's first task was to discover, through local education authorities, colleges of education, HMIs etc. which schools were considered to be doing interesting work in social studies, defined deliberately broadly by the team to include any kind of learning which fosters the development of social concepts, general social awareness and the understanding of modern industrial society. These schools, about 300 in all, were asked to complete questionnaires, from which 25 secondary and 60 primary schools were selected for a one-day visit by a team member to talk to the head and teachers and observe lessons. Of these, 14 secondary schools and 12 primary schools were selected for longer visits, when the team were able to explore further the nature of the course work or projects, to discuss aims and methods with teachers, and to tape-record interviews with children.

Not being in a position to employ objective evaluation techniques and not wishing to record subjective impressions of the success of work in a particular school, it was decided to base judgements about the work of the school and the sorts of understandings of society that the children were showing on an evaluation of tape recorded interviews with the children.

REPORT

A research report has been prepared and will be published as a Schools Council working paper by Evans/Methuen Educational late in 1971. In addition to an analysis of 10 secondary and 8 primary schools where members of the team spent up to a week observing what was in their view successful work in social studies, the report contains accounts of work in a number of schools that were not visited, either because the work was not completed or because the children concerned had left. There is also an introductory section on the nature of social studies for the 8–13 age group; a section outlining a framework for curriculum development in social studies derived from the research and the implications for teachers involved; a section on resources for social studies, including recommended books, films, filmstrips, wall charts, film loops, records, radio and television; an outline of the basic trends of new social studies projects in the U.S.A.; a section on objectives in social studies teaching; and a section giving specific suggestions to teachers about the sort of social studies work that could be introduced in the middle years of schooling. This framework is in two stages – the first, for children of 8–10, on project-based work, in which there is not necessarily any sequence, and the second, for children of 10–12, a sequential curriculum to develop important ideas about society.

The final section includes a recommendation that a development project be set up, principally to develop materials much needed in this field. This recommendation has been implemented and such a project will start in September 1971 under Professor W.A.L. Blyth at Liverpool. See History, Geography and Social Sciences in the Middle Years of Schooling.

RELEVANT PAPERS AND PUBLICATIONS

Schools Council *The middle years of schooling from 8 to 13,* (Working Paper 22), HMSO, 1969, 13½p.
Schools Council *Social Studies 8–13* (Working Paper 39), Evans/Methuen Educational, 1971.

FURTHER INFORMATION from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

PROJECT ENVIRONMENT

DIRECTOR: **Mr. R. W. Colton**

LOCATION: Department of Education, The University, St. Thomas Street, Newcastle-Upon-Tyne NE1 7RU.
Telephone: Newcastle (0632) 28511

DURATION: 1970–1973 **AGE RANGE:** 8–18 **GRANT:** £40,000

AREA OF ENQUIRY

In 1965 the Schools Council set up, after consultation with the National Rural Studies Association a working party to enquire into the nature of rural studies in secondary schools and by an analysis of the information thus obtained:

1. to clarify the meaning of the term 'rural studies' as applied to school courses, and to identify the place of rural studies in the curriculum of the secondary school in relation to the age and ability of the pupils likely to profit from the subject

2. to determine the objectives of rural studies and the means by which these objectives are generally achieved

As a result of this enquiry, the findings of which are published in *Rural Studies in Secondary Schools,* Schools Council Working Paper 24, a research and development project was established whose aims were:

1. to define the nature of the subject. For example, what areas of knowledge are involved? What is the philosophy of the subject? What are the educational objectives and by what methods are these to be approached?

2. to examine more closely the part which the subject might play in educating children through the environment and encouraging an enlightened interest in the quality of the environment and a concern for its intelligent management

3. to enquire into the subject's relationship with other subject areas

4. to investigate ways in which satisfactory courses in the subject, for all children, might be provided

5. to examine the facilities necessary for children to gain satisfactory practical experience in the subject in middle and secondary schools.

PROCEDURE

Much of the project's first year has been spent visiting some 200 schools throughout the country, talking to teachers and head teachers, seeing work, and making contact with LEA administrators, advisers, research and curriculum development officers. In addition contact has been made with a wide range of organisations concerned with town and country planning, forestry, conservation, etc. and with the Ford-sponsored Environmental Education Project at the University of Colorado.

In assessing what appear to be the priorities, the project team have decided to concentrate their efforts in specific areas.

1. Two factors combine to dictate the first priority. One is the urgent need for schools to play their part in developing in the population an awareness of our dependence on the natural environment for the necessities of life, a realisation of the threats now posed by an over-hasty technology and a concern to maintain the quality of the environment. Second is the frustration felt by many of the older children at the seeming irrelevance of schooling to the life they are living and will live in the future. When the school leaving age is raised this problem may well be heightened.

   It is hoped to produce materials which, by involving children with these current problems of the environment, will meet the demands of society and the needs of our older pupils, whether they be at A-level for the academically able, or at some more moderate standard for the early leavers.

2. The educational use of the school estate. A unique feature of rural studies in schools has always been its concern with the use which man makes of other organisms to serve his own ends, and the school estate plays an essential part in the child's experience of the management of plants and animals. With decreasing availability of natural areas available to schools, the project hopes to produce some guidance as to the best use of school grounds. The use of parks and open spaces by town schools also needs to be explored.

3. It is hoped to interest DES architects in studying with the project the most suitable scale and type of provisions of land and buildings for this subject.

4. Consideration will be given to the special needs of Educational Priority Areas.

5. It is hoped to involve schools in practical projects in association with county planning departments.

MATERIALS

It is hoped to develop materials with teachers, not simply for them. This may mean asking teachers who are doing interesting work to develop it further, as well as inviting teachers to develop in their own particular way ideas initiated by the project. The outcome of such work may be the publication of a series of case studies, or the formulation of ideas which need more widespread testing through trial schools. Some 30 or so pilot schools will test material, working closely with the central team, and it is hoped that there will also be a number of associate schools linked with the pilot schools.

RELEVANT PUBLICATIONS
Schools Council: *Rural Studies in Secondary Schools* (Working Paper 24), Evans/Methuen Education, 1969, 20p.
A progress report, January 1971, is available from the project.

FURTHER INFORMATION is available from the project director, or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

The Director, Deputy Director and the Area Organisers would be glad to hear from interested teachers. Addresses are as follows:
R.F. Morgan, Deputy Director, Roscoe House, Bolton Road, Anderton, Chorley, Lancashire PR6 9HW
J.E. Purcell, Department of Education, St. John's College, Lord Mayor's Walk, York YO3 7EX
J.R. Slade, Science Adviser, Hampshire Education Committee, The Castle, Winchester.
H.I. Smith, Flat 2, 9 Stevenstone Road, Exmouth, Devon EX8 2EP.
P.K. Twist, Environmental Science Adviser, Holland Education Committee, County Hall, Boston, Lincolnshire.
D.G. Alexander, Education Department, County Hall, Cauldwell Street, Bedford.

HISTORY, GEOGRAPHY AND SOCIAL SCIENCES IN THE MIDDLE YEARS OF SCHOOLING

DIRECTOR: **Professor W.A.L. Blyth**

LOCATION: School of Education, University of Liverpool, P.O. Box 147, Liverpool, L69 3BX
Telephone: Liverpool (051)–709 7312

DURATION: 1971–1974 **AGE RANGE:** 8–13 **GRANT:** £128,000

AREA OF ENQUIRY

The project was commissioned at the suggestion of the Social Studies 8–13 Research Project (q.v.) and of a working party of representatives from the history, geography and social studies committees and directors of relevant projects, who were considering the urgency of co-ordinating development work in this field. The aim of the project will be to formulate teaching objectives, with particular reference to progression is learning and styles of teaching, and to develop trial materials, drawing on the three subject areas, to be used by teachers whether in an integrated framework or otherwise.

PROCEDURE

It is proposed that the team should make an initial appraisal of the work being done by other Schools Council projects in the field, and of other existing materials and research reports. A short working paper will be produced indicating the team's concept of the contribution and interrelation of the three subject disciplines. This appraisal should indicate the kind of supporting material which the project should produce. It is envisaged that trial materials should be devised in co-operation with selected teachers' centres in different parts of the country. These materials would be tested in a few schools associated with the teachers' centres, evaluated, introduced into a wider range of schools, and revised for publication. They would be accompanied by guide books for teachers and a handbook expressing points of view about the subject area as a whole.

FURTHER INFORMATION is available from the project director, or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

RELIGIOUS EDUCATION IN SECONDARY SCHOOLS

DIRECTOR: Professor N. Smart **DEPUTY DIRECTOR:** Mr. D. Horder

LOCATION: Department of Religious Studies, University of Lancaster, Cartmel College, Bailrigg, Lancaster.
Telephone: Lancaster (0524) 65201

DURATION: 1969–1972 **AGE RANGE:** 11–16 **GRANT:** £46,000

AREA OF ENQUIRY

The project was established to carry out research and develop materials relevant to the construction of a satisfying programme of religious education in secondary schools, acceptable to people of differing convictions and taking into account the presence of non-Christian populations in this country. This task would be based upon the following principles:

1. Insight should be given into the role of religion, and in particular the Christian religion, in the formation of British society
2. Insight should be given into the nature, challenge and practical consequences of religious belief
3. Religious education should reckon with the pluralism of people and practice in contemporary British society and in the wider world
4. Religious education should be open rather than dogmatic; and should require honesty of conviction of whatever kind in the teacher, without infringing the right to develop freedom of choice in the pupil
5. Religious education should both be relevant to the experience of the young and designed to broaden that experience towards an understanding of the religious dimension in human culture

Such principles will be given concrete expression in the curriculum development work of the project, and its proposals will be based not only on a survey of existing practice in, and literature on, religious education in schools, but on the contributions of philosophy, sociology, history and psychology to the theory and practice of teaching.

PROCEDURE

An initial period was spent surveying existing practice in secondary schools, current literature on religious education and previous research in this field. In addition, schools were selected in and around Birmingham, Lancashire, South-East London and West Riding of Yorkshire; over 100 teachers from these schools are co-operating with the project in devising an outline curriculum for pupils aged 11–16, and in the production of specimen multi-media teaching units that pay special attention to the middle years of schooling, early leavers, potential sixth formers and pupils from multi-racial areas. Units devised to date include such topics as *Exploring Belief, The Life of Man: The Family, Racial Awareness, Social Problems in a Multi-Racial Society, The Activity of Worship, Science and Religion.*

These materials are being tested in the teachers' own schools and, in the light of their experience, a more extensive programme will be conducted in a larger number of schools, including some in Cambridgeshire, Cumberland, Devon and Exeter.

Each of the units contain carefully defined aims and educational objectives. Whilst the course for younger children will be more general with an emphasis on the common ground of religious education needed by all children, older children will have the opportunity to make a study of one or more specific religions. The project is also anxious that attention be paid to the role of the emotions in the formation of religious beliefs and attitudes, as well as the need for accurate information and the ability to reason clearly and logically. Specimen teaching units therefore encourage the use of role-play and other forms of discovery through involvement.

From the work done in the schools with the trial units, it is hoped to produce an analysis of what, from an educational point of view, is feasible as the content of religious education in the 11–16 age group, an outline syllabus, and materials for teaching units.

PUBLICATION

In addition to the production of teaching materials, the project have produced a working paper which will be published by Evans/Methuen Educational in July 1971 entitled *Religious Education in Secondary Schools.* The authors would not claim to know all the answers, but suggest that the questions they deal with, ranging from the reasons for studying religion, through aims, objectives, content and methods to minority groups and implications for teacher training, are some of those that need to be faced if the difficulties surrounding the teaching of religion in schools are to be understood and future patterns made plain.

RELEVANT PAPERS AND PUBLICATIONS

D. Horder, 'The fourth 'R'?', *Dialogue* 7, February 1971.
D. Horder, 'Religious Education in Secondary Schools', *Learning for Living,* March 1971.
Schools Council, *Religious Education in Secondary Schools* (Working Paper 36), Evans/Methuen Educational, 1971.

FURTHER INFORMATION is available from Mr. Horder at the project, or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

APRIL 1971

SOCIAL EDUCATION

DIRECTOR: **Professor H. Davies** **TUTOR: Mr. J. Rennie**

LOCATION: Institute of Education, University of Nottingham, University Park, Nottingham.
Telephone: Nottingham (0602) 56101

DURATION: 1968–1971 **AGE RANGE:** 11–16 **GRANT:** £21,000

AREA OF ENQUIRY

The curriculum research project was established to promote in young people an active involvement in the affairs of the community through a development of social skills and awareness.

PROCEDURE

After a preliminary period of working with ten schools in the Nottingham area, the project team is now evolving syllabuses in close co-operation with four schools, two in Nottingham and two in Nottinghamshire. The team has not devised a set course, nor has it produced materials, but has worked with teachers in the schools on ways to achieve the aims given above. These can roughly speaking be divided into three phases. Initially, for children to become aware for themselves of the needs of their community, they will need certain skills of observation and communication and will also need to go some way towards understanding other people and themselves and the structure of society.

The next phase has involved the children in detailed examinations of the structures and attitudes prevailing in their class, their school, their families and their peer group. Profiles have been built up through observation, interviews, photographs, creative writing, drama, etc., and the results carefully recorded and discussed. The final stage has been the development of an area profile bringing the school into contact with many sides of community life. It is hoped that this process will have built the sense of identification that results in action, and projects undertaken by the schools as results of area profiles have included an exhibition to make people in a redevelopment area aware of the implications of the Council plan, and an attempt to persuade a local councillor to utilise waste land round the school.

Teachers from many different subject backgrounds and with varied interests have been involved in the social education programme in the four schools. Meetings of all teachers involved have been held frequently to plan the syllabus and to discuss papers provided by the project team. Student teachers from Nottingham Institute and Department of Education and from the Regional College of Education have also been involved in the work of the project.

EVALUATION **Evaluator: Professor E. Lunzer**

An evaluation exercise is currently being undertaken. It is hoped to measure whether the project's aims are being achieved in terms of behavioural objectives. The reaction of children to certain situations and their replies to particular demands will be measured.

DIFFUSION

A Social Education Newsletter put out by the University and produced by a working party made up of teachers from the project schools is now going out to all schools in the Nottingham University ATO.

FINAL PUBLICATIONS

A report is being prepared for submission to the Schools Council at the conclusion of the project. This will include the introduction of social education into schools, the aims and objectives of the project, an account of the four trial schools, and an evaluation study of the project as a whole.

RELEVANT PAPERS AND PUBLICATIONS

John Rennie, "Children and their Community", *Dialogue* 6, August 1970.

FURTHER INFORMATION from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

INTEGRATED STUDIES PROJECT

DIRECTOR: **Mr. D. Bolam**

LOCATION: Institute of Education, University of Keele, Keele, Staffs ST5 5BG
Telephone: Keele Park (0782–71) 371

DURATION: 1968–1972 **AGE RANGE:** 11–15 **GRANT:** £53,425

AREA OF ENQUIRY

The project was established to explore the problems and possibilities of integrated humanities courses during the first four years of secondary education (11–15) and across the whole ability range.

' Humanities ' are understood as any subject, or aspect of a subject, which contributes to the rational or imaginative understanding of the human situation. ' Integration ' is understood as the exploration of any large area, theme or problem which a) requires the help of more than one subject discipline for its full understanding; b) is best taught by the concerted action of a team of teachers.

PROCEDURE

The project is considering integration at three levels:

1. In the mind of the child – the integration of experience
2. Between the forms of knowledge – the organisation of several disciplines, or some of their skills and concepts, as appropriate aids to a particular enquiry
3. In a school – a team of teachers planning, within their given resources, to exploit the latter to achieve the former

Given that the ultimate objective is for the pupil to be able to integrate his own experiences in a meaningful way, the project has developed a series of units that form part of a study based on man himself. These units draw on materials gathered from the expressive arts, and the social sciences, while the natural sciences, technology, and ' value ' areas such as morals, religion and philosophy are brought in as necessary. A full course is not being produced, and the units are designed to exemplify different patterns of integration.

The approach involves some form of team teaching, and is based on the conviction that integrated units are viable within a number of organisational patterns. The project is producing a handbook for teachers which will consider some of the implications of integrated teaching both in the ideas behind integrated work and in practical organisation for schools.

The project has been working in close co-operation with [illegible] schools in four counties who have been trying materials and providing the central team with feedback. Four co-ordinators working in Cheshire, Staffordshire, Stoke-on-Trent and Shropshire have been seconded to the project team, and it is in these areas that most of the trials have been undertaken.

MATERIALS

Each unit contains an analysis of the area of enquiry, suggested activity patterns, loose-leaf multi-media teaching materials and information on further sources.

A. For Juniors (Forms 1 & 2)

Exploration Man – an introductory unit which introduces pupils to the idea of integration, and to the range of the humanities field through an exploration of the meaning of being human. The enquiry is focused on two over-arching concepts – the complexity of a human being and the range of ways of finding out about him. The materials have the widest subject coverage of any pack and could be handled by almost any combination of teachers.

Living Together – this unit is focused on key aspects of human living, and uses four comparative studies – Tristan de Cuhna, Borneo, China, and a pupil's own community – as a basic introduction to the social sciences. It focuses in each study on a few aspects, such as home and family, work and leisure, social grouping and control, values and beliefs. The pack offers most to teachers of geography, history and English.

Communicating with Others – this unit is concerned with the ability to communicate: an activity basic to man and peculiar to him. The main areas are verbal, visual and musical communication; the origins of language; historical case studies; oral tradition and fieldwork; and social and physical barriers to communication.

B. For Seniors (Forms 3, 4 & 5)

Development in West Africa – an attempt to understand another society and its culture, through a range of subject insights. (Still in preparation)

Groups in Society – this asks ' What is society? ' and considers the problem of groups in conflict with majority opinion. There are sections on the nature of society, groups in Great Britain, a depth study of gypsies and comparisons of different groups in time and place.

Man-Made-Man – a unit which explores the ' image of man ' in creative arts, and the extension of man's capacities through technology.

PUBLICATION

The Junior units are to be published by Oxford University Press in late 1971 and/or in 1972. A decision on the publication of the Senior Units will be taken later.

A teacher's handbook will be published simultaneously with the Junior units, including notes on the project's theoretical approach to integration, and dealing with practical problems of implementation – team-teaching, time-tabling, teaching methods etc.

TRAINING AND DIFFUSION

The project team are running two training courses in July 1971 to alert head-teachers advisers, etc. to some of the implications of integrated courses and team teaching. Further training courses will be provided during 1971/2. Details of these from the project director.

EXAMINATIONS AND ASSESSMENT

The project team is exploring the possibility of CSE certification by styles or modes of assessment, and has had preliminary talks with some of the CSE Boards.

EVALUATION

A member of the Keele Department of Education who is not a member of the project team is writing case studies of 6 trial schools. In addition, one team member has spent the final year of the project observing the work of the project in schools and interviewing teachers.

FURTHER INFORMATION is available from the project director, or from Mrs. Gillian Box, Information Centre, Schools Council, 160 Great Portland Street, London W1N 6LL.

MORAL EDUCATION PROJECT

DIRECTOR: Mr. P. McPhail

LOCATION: Department of Educational Studies, University of Oxford, 15 Norham Gardens, Oxford OX2 6PY
Telephone: Oxford (0092) 54121

DURATION: 1967–1972 **AGE RANGE:** 13–16+ **GRANT:** £32,000

AREA OF ENQUIRY

The project was commissioned as part of the Schools Council's programme for the raising of the school leaving age, and had its roots in *Working Paper 2.* The project is devising curricular methods and teaching materials to help children in secondary school to adopt a considerate style of life, that is to adopt patterns of behaviour which take other people's needs, interests and feelings into account as well as their own. It is interested not only in attitude change, but also in behavioural change.

PROCEDURE

Three independent surveys have shown that about 70% of 15 year-old secondary school pupils would welcome help from their schools with their interpersonal relations and problems, and over the question of right and wrong. Thus it seemed it would not be difficult to motivate children to work out more considerate solutions to their problems over relationships, bearing in mind this kind of behaviour is rewarding to those involved, and contributes to their happiness and health. The project is working on the assumption that if we can help children to establish better relationships in the personal, group and organisation areas, then we will help them to become healthy and creative adults who contribute most as individuals in their work situations as well as in their private lives.

Much of the project's work has been done in association with working parties of teachers. As a result of considering such teachers' view on how children should be educated morally, the project decided:

1. Not to think of moral education as a seperate school subject
2. To develop materials which can be used in a variety of subject situations
3. To investigate educational activities frequently mentioned as having moral value
4. To concentrate a considerable proportion of their energy on introducing interpersonal interaction and school organisation work in school

The project's materials have been used by many different subject teachers, including scientists and teachers of religious education and English, and in a variety of subject 'slots'. Underlying the work is the fundamental importance of establishing dialogue between people motivated to consider each other, people who are highly skilled in the interpretation of the cues which others give us as to their feelings and interests and good themselves at sending unambiguous messages; it is therefore more important that teachers using the material should be able to handle such classroom situations than that they should be of a specific subject discipline.

MATERIALS

Varied materials have been developed which include the use of discussion, role play, creative writing and art. These will be published by Longman, Green and Co. from late 1971. The project would support Shelley's dictum that 'The great instrument of moral good is the imagination'. The programme is designed on the principle of the expanding universe, to lead pupils from familiar and simple situations towards more complex and less immediately recognizable problems. Thus the first group of materials – *Sensitivity, In Other People's Shoes* and *Consequences* – introduces face to face incidents in everyday surroundings. For example, in sex role situations, pupils are given the girl's and boy's point of view on the question of a strenuous canoeing holiday and are asked what they would do in a similar situation. The second set – *Proving the Rule,* including *Rules and Individuals, What do you Expect, Who Do You Think I Am?, In Whose Interests* and *Why Should I?* – deals primarily with the behaviour of small groups, again in familiar settings. The third set – *What Would You Have Done?,* including *Birth Day, Solitary Confinement, Arrest! Street Scene, Hard Luck Story* and *Gale in Hospital* – is topic material based on incidents from the recent past, such as the arrest of the Frank family in Nazi Europe, the 1965 Los Angeles riots etc.

In addition, the project team are preparing:
A handbook for teachers and students on the practice of democracy by secondary school pupils, entitled *Our School.*

Moral Education in the Secondary School – a book introducing the programme, outlining the rationale and relating the materials.

I Didn't Know – a book covering common adolescent areas of ignorance about the Law.

Assembly in the Secondary School – a handbook on teachers' and children's attitudes to assembly as Moral Education.

Why be Good? – discussion and field study work for older secondary children on the justification for taking other people's needs, consideration and feelings into account.

Film, slides and tapes are also in preparation.

EXAMINATIONS AND ASSESSMENT

The materials are not intended to be examined, or to form part of an examination syllabus.

EVALUATION

The materials were devised in association with groups of teachers, have been tested in some 200 schools, and revised in the light of feedback from teachers. Tests have also been administered to groups of children before and after using the material to measure attitude change, although the project's prime interest is in behavioural change

TRAINING AND DIFFUSION

The project team hope to spend much of their final year in introducing the programme and appropriate methods of using materials to Heads, experienced teachers, LEA advisers, wardens of teachers' centres and others. They are also working with a Community Relations Project in Ulster, adapting materials and devising a programme based on local needs. It is hoped that once teachers all over the country are acquainted with the technique and the materials, they will be encouraged to develop further materials for the needs of their own pupils.

RELEVANT PAPERS AND PUBLICATIONS

Peter McPhail, 'The Moral Education Curriculum Project', in *Let's Teach Them Right,* ed. Macy. C, Pemberton Publishing Co., 1969.

Peter McPhail, 'Education for Change', *New University,* February 1970.

Peter McPhail, 'The Motivation for Moral Behaviour', *Moral Education,* Vol.2, Number 2, Peter McPhail, 'Adolescent Problems of Adjustment', *Essays to a Young Teacher,,* ed. Howat, G.M.D. Pergamon, 1966.

Jasper Ungoed-Thomas, 'Race Relations and Moral Education', *Race Today,* October 1970.

Schools Council: *Raising the School Leaving Age,* (Working Paper 2), HMSO, 1965, 17½p.

Schools Council: *Choosing a curriculum for the young leaver,* (Working Paper 33), Evans/Methuen Educational, 1971, 26p.

FURTHER INFORMATION is available from the project director or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London, W1N 6LL.

HUMANITIES CURRICULUM PROJECT

DIRECTOR: **Mr. L. A. Stenhouse**

LOCATION: Centre for Applied Research in Education, University Village, University of East Anglia, Norwich NOR 88C. **Telephone:** Norwich (0603) 56161 (1967–1970 at Philippa Fawcett College, Streatham S.W.16)

DURATION: 1967–1972 **AGE RANGE:** 14–16+ **FINANCE:** £174,328 (+ £60,000 from Nuffield)

AREA OF ENQUIRY

The project was set up in September 1967 as part of the Schools Council's programme for the young school leaver, to offer to schools and to teachers stimulus, support and materials appropriate to enquiry-based courses which cross the traditional boundaries between English, history, geography, religious studies and social studies. It was initially intended for pupils of average and below-average ability but the project's materials and methods have been found useful across the ability range and for older age groups.

The project started from the conception of the humanities outlined in Schools Council Working Paper 2, *Raising the School Leaving Age;*

> 'The problem is to give every man access to a complex cultural inheritance, some hold on his personal life and on his relationships with the various communities to which he belongs, some extension of his understanding of, and sensitivity towards, other human beings. The aim is to forward understanding, discrimination and judgement in the human field.'

PROCEDURE

As a result of experience in some 34 trial schools the project has been defining a teaching pattern which has discussion rather than instruction as its core and in which pupils review 'evidence' under the chairmanship of a teacher who represents educational values and critical standards but maintains neutrality – does not take sides – on the controversial issues under discussion.

The project director has written:

> 'It is also pertinent to ask: what is meant by educational values and critical standards? The teacher, though he be neutral on controversial issues, has as an educator a responsibility to foster rationality rather than irrationality, sensitivity rather than insensitivity, imaginativeness rather than unimaginativeness, tolerance rather than intolerance. He must also help students to see that standards of critical judgement are important. It is important that he learns to do this through thoughtful questioning which does not direct the students to particular conclusions in controversial areas.
>
> 'Of course, it is not possible to attain perfect neutrality. The important point is that the teacher accepts the principle of neutrality as a criterion by which to criticize his teaching and that he makes this criterion clear to his students so that both he and the group understand what he is trying to do.

'Pupils into Students' *Dialogue* 5

A controversial issue has here been defined as one which divides pupils, parents and teachers because it involves an element of value judgement.

Discussion cannot fruitfully take place in a vacuum and the project has therefore developed collections of materials as 'evidence' for use in the discussion. These materials consist of photographs statistical tables, films, tapes, slides, extracts from books and other written sources (see over). They are intended as a basis for an archive collection to which it is hoped teachers will add their own items. By using the word 'evidence', the project intends not to define the status of the materials but the way they are used. They are used not for their own sake but in order to contribute to the discussion of a controversial issue, and in this context must be weighed reflectively and critically.

Whilst discussion provides the core of work in this project, there are many other activities which may arise from the discussion, the results of which are fed back into the discussion. These fall into three main areas: 1) research into problems thrown up by the evidence, issues not fully covered, or a local study, e.g. a study of war-time bombing in the locality, or a visit to a local playgroup; 2) personal work, such as writing, painting, role play and drama; and 3) work which draws together the enquiry, for example the making of a film, the production of additional materials, an exhibition of work.

MATERIALS

These are published by Heinemann Educational Books Ltd., 48 Charles Street, London W.1. from whom they may be ordered.

Collections:	*Education*	May 1970
	War and Society	May 1970
	Family	November 1970
	Relations between the Sexes	November 1970
	People and Work	May 1971
	Poverty	September 1971
	Law and Order	
	Race	
	Living in Cities	

Each collection costs £37.46 (inc. purchase tax). A collection includes:

1. 20 copies of each of 200 pieces of printed material. Each 20 is packaged in a polythene bag.
   The printed materials are presented in looseleaf form and include extracts from novels, drama, history, biography, social sciences, poems and songs, letters, reports, newspaper articles, maps, cartoons, questionnaires, graphs, statistics, photographs, advertisements.

2. 2 teacher's sets, each containing 1 copy of each piece of printed material and 1 copy of the handbook on the area of enquiry (including synopses of approx. 100 recommended films).

3. 2 copies of *The Humanities Project: an Introduction,* containing guidelines for the use of material and the group discussion. This is available separately, price 35p.

4. 1 set of tapes (about 3 hours playing time). These are of original material such as interviews and songs, and of poetry and drama (which may also appear in printed form).

N.B. **Films,** including shorts, extracts and features, are recommended in the handbook.
Slides of relevant paintings, photographs and documents are available separately from the Slide Centre, Brodrick Road, London S.W.17.
The teacher's set (Nos. 2,3,4) is available separately, price £12.55 (inc. purchase tax) from Heinemann Educational Books Ltd.

In addition to teaching materials, a research series *Studies in Humanities Teaching* will be published. This series will report on work in schools and deal with special problems such as creative work by pupils, school organization and examining.

EXAMINATIONS AND ASSESSMENT

The project is currently discussing patterns of CSE Mode 3 examining with the Boards. Some tentative proposals are given on pages 33–36 of *The Humanities Project: an Introduction.*

EVALUATION

Evaluator: Mr. B. Macdonald

Whilst the project's materials have been evaluated by the central team during their use in trial schools and have been revised in the light of teachers' comments, the project's teaching methods and its impact within the school are the subject of a separate four year study by the evaluation team. Data is being collected from large numbers of trial schools and more recently, from schools using published materials, with reference to variables ranging from ethos and locality of the school to the reaction of teachers to innovation. Depth studies are also being undertaken, and a preliminary report is expected in 1971. The aim of the evaluation work is to provide guidance to heads and others who have to make decisions about whether or not they wish to use and build upon the ideas and materials developed by the project.

DIFFUSION AND TRAINING

It is clear from the evaluation study of the project that it is in the highest degree unlikely that teachers will find it profitable to use the project materials in a discussion setting without training. To this end the project has organised a number of five-day training courses for teachers, advisers and others nominated by their local authorities who will in turn conduct their own courses for teachers in a particular area. Courses have also been run for lecturers in colleges, departments and institutes of education and for further education lecturers. Teachers wishing to know of further training plans should contact Miss Jean Rudduck at the project.

RELEVANT PAPERS AND PUBLICATIONS

Gillian Box and L.A. Stenhouse 'The Storage and Indexing of Teaching Materials' HCP Working Paper 2, 1968.
L.A. Stenhouse 'The Humanities Curriculum Project' *Journal of Curriculum Studies,* Vol. 1., No. 1 November 1968.
L.A. Stenhouse 'Open-minded teaching' *New Society,* 24 July 1969.
L.A. Stenhouse 'Handling controversial issues in the classroom', *Education Canada,* December 1969.
John Elliott 'The role of the Humanities in Vocational Education', *Studies in Education & Craft,* Journal of College of Craft Education Autumn 1969.
L.A. Stenhouse 'Pupils into Students?' *Dialogue* 5 February 1970.
The Humanities Project: an Introduction, Heinemann Educational Books Ltd., 1970 75p.
Schools Council, *Raising the School Leaving Age,* (Working Paper 2), H.M.S.O. 1965 17½p.
Schools Council, *Choosing a Curriculum for the Young School Leaver,* (Working Paper 33), Evans/Methuen Educational, 1971, 26p.

TELEVISION AND RADIO

Education Programme: Humanities. A 5 minute clip from a black and white 16 mm film of BBC1 TV programme 17th May, 1970.
What are teachers for? Radio 4 programme, 12th August, 1970. A half-hour programme of classroom discussion and interviews on the Humanities Project.

FURTHER INFORMATION

All items listed above and copies of all published materials are available for reference only in the Schools Council Information Centre.

Further information is available from the project director, or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL

PREPARING FOR WORLD CITIZENSHIP

DIRECTORS: **Mrs. Wendy Overshot (until September 1968)**
Miss Kaye Jones (from October 1968)

LOCATION: Council for Education in World Citizenship—Cymru, Temple of Peace, Cathays Park, Cardiff.

DURATION: 1967–1970 **AGE RANGE:** 14–16 **GRANT:** £780

AREA OF ENQUIRY

This pilot study was set up in association with the Council for Education in World Citizenship – Cymru, to stimulate and co-ordinate experimental work in six secondary schools on international topics, suitable for less able pupils aged 14–16, and to explore the need for and feasibility of mounting a more extensive curriculum development project in this field.

C.E.W.C. – Cymru is a voluntary body which seeks to promote education for international understanding in the schools of Wales.

PROCEDURE

In consultation with teachers in the six participating schools, a number of draft schemes were prepared, and the four eventually chosen for trial use in the schools were World Health, World Population, the Role of Women, and Science and Technology in a World Context. The basic principle underlying each of the four courses was to begin with human problems which the pupils would recognize to be relevant to their own experience, then to relate these to the immediate environment and finally to put the problem into a wider national and international context, related to world wide efforts to promote welfare and improvement. Each course required an inter-disciplinary approach and involved members of staff from different subject areas. A syllabus was produced in each of the four courses, and the schools were assisted with bibliographies, visual-aids and other materials. It was inevitable in a small project of this kind, that much should be left to the initiative and professional judgement of the individual teacher, but some of the participating teachers came to feel that this was not entirely a disadvantage.

EVALUATION

An assessment of teachers' reports and classroom observation has led the project to conclude that given certain conditions such as well-motivated members of staff, administrative support, the good-will of colleagues and appropriate in-service training courses, the implementation of these courses leads to increased pupil achievement and interest. The project has confirmed the need for a more extended curriculum project.

FINAL PUBLICATION

A report of the project has been submitted to the Schools Council with a view to publication.

FURTHER INFORMATION is available from the Secretary, C.E.W.C. (Cymru) or Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL

APRIL 1971

GEOGRAPHY FOR THE YOUNG SCHOOL LEAVER

DIRECTORS: **Mr. R. Beddis and Mr. T. Dalton**

LOCATION: Avery Hill College of Education, Avery Hill Road, London, S.E.9. **Telephone:** 01–850 9339

DURATION: 1970–1973 **AGE RANGE:** 14–16 **GRANT:** £39,000

AREA OF ENQUIRY

The project was commissioned as part of the Schools Council's programme for the raising of the school leaving age and is concerned with pupils of below average to average ability between the ages of 14 to 16.

Whilst not restricting its work entirely to the ability group considered by the Newsom Committee the approach suggested in their Report seems appropriate to the project's outlook, namely, that 'the curriculum in the final years should be deliberately outgoing – an invitation into the adult world of work and leisure.' It is the belief that the geographer has a distinctive contribution to make to the understanding of many problems facing the young adult today that provides the basis of the project's work.

The main aims are:

1. To examine successful work which is being undertaken at present with relevant groups of pupils in the 14–16 age group
2. To define the contribution that geography can make to the particular educational needs of pupils of this age and ability
3. To investigate the skills which these pupils can master in the pursuit of this work
4. To produce schemes of work which can be used in either a subject or an inter-disciplinary framework

PROCEDURE

The team is initially engaged on a study of present curriculum developments and relevant teaching resources that are available to schools, and questionnaires have been circulated to a number of schools to establish a picture of current methods and approaches being used in England and Wales.

Schemes of work are being developed which will allow for varied activities to accommodate the range of skills and interest of these pupils, staged within the context of the environment at local, national and world levels. Pre-pilot trials of one theme are being conducted in 1971, and regional trials will take place from the Summer Term 1972 to the Spring Term 1973. The pre-pilot trials will be concerned with the theme 'The Geography of Leisure'. Eight classes from five schools in S.E. London (ILEA, Croydon and Bromley) are participating in the six-week pre-pilot trials.

Whilst the project plans to produce sufficient materials and schemes of work to engage pupils for their final two years of study, they will not be proposing a rigid framework nor a detailed syllabus. The project is also quite consciously seeking ways in which work initiated by the schemes and materials may be extended to other fields and subject areas.

EXAMINATIONS

A study of the examination of geography at CSE level will be undertaken.

TRAINING AND DIFFUSION

In-service courses and conferences will be held to disseminate the findings of the project.

FURTHER INFORMATION is available from Mr. T. Higginbottom at the project or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

APRIL 1971

GEOGRAPHY 14–18

DIRECTOR: Dr. Gladys Hickman

LOCATION: School of Education, University of Bristol, 22 Berkeley Square, Bristol, BS8 1HS.
Telephone: Bristol (0272) 24161

DURATION: 1970–1974 **AGE RANGE:** 14–18 **GRANT:** £53,000

AREA OF ENQUIRY

This curriculum development project was established to help teachers of geography to structure courses and prepare materials for use in schools, primarily with more able pupils in the 14–18 age range.

Its work was to encompass the following areas:

1. An analysis of the current situation in geography teaching in schools, including recent changes in teaching and research in geography in the universities
2. The collection of relevant research findings on cognitive and other aspects of personal development
3. The identification and clarification of relevant concepts and key ideas and their possible structuring into courses of study
4. The provisional formulation of objectives in geography teaching in this age range and with more able pupils
5. The clarification of criteria for content of courses
6. The preparation, trial and diffusion of materials and other 'resources for learning'
7. The ongoing evaluation of outcomes and objectives

PROCEDURE

The project's initial concern has been with an examination of the curriculum and the contribution of curriculum models and research findings. It is hoped that a Working Paper will be prepared during 1971–2, reviewing the work of the initial period and outlining proposals for implementation.

It is also planned to produce materials which are seen as an agent for change in supporting curriculum development in a small number of schools. Teachers will be encouraged to rethink their aims and their role in the classroom in terms of a wider educational and social framework, supported by exemplar materials and guides. It is intended that these should illustrate key themes, problems and concepts in geographical thought, placing particular emphasis on changing interpretations and orientations while bringing out what remains worthwhile in older ideas and methods. They will be structured so as to clarify the role and importance of particular geographical techniques and methodologies within a wider theoretical and philosophical framework, but will, it is hoped, lend themselves to flexible use in a class or individual situation.

In addition to the group of schools working closely with the project team, a further group of schools will be enabled to use materials and contribute to regional meetings.

As an alternative means of curriculum development an experimental scheme is being run at the West Gloucestershire Teachers' Centre, where teachers from five schools are meeting periodically for six months to produce a curriculum unit. The group has discussed papers prepared by the project and is writing a series of lesson plans to fit into an agreed framework.

EXAMINATIONS

The project is currently considering promoting experimental examinations in geography at O-level to match new curricular ideas and materials.

EVALUATION

The project team sees the evaluation of its work as falling into two main categories:

a. Feedback on the effectiveness of the *means* by which it hopes to achieve its objectives. This would include information on the teachability of its materials, the clarity of its theoretical frames, the helpfulness of its advice on curriculum planning etc.

b. Evaluation intended to gauge the achievement of the objectives themselves, for example, to what extent there had been change in processes of curriculum planning and collaboration within participating schools, particularly those enabling departmental teams to sustain processes of curriculum development without outside help; and what changes could be discerned in student abilities and dispositions.

RELEVANT PAPERS AND PUBLICATIONS

J. Reynolds 'Schools Council Curriculum Development Project : Geography 14–18 years *'Geography* January 1971.

J. Reynolds *'Geography 14–18: A framework for development'* March 1971
Not suitable for general enquiries but useful to those interested in a theoretical analysis of the technical problems of curriculum development.

FURTHER INFORMATION from the project or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

GENERAL STUDIES PROJECT

DIRECTOR: Mr. R.I. Smith

LOCATION: University of York, The King's Manor, York, YO1 2EW **Telephone:** York (0904) 59861

DURATION: 1968–1972 **AGE RANGE:** 15–18 **GRANT:** £45,000

AREA OF ENQUIRY

The aim of the project is to help schools and colleges in the general education of students over the age of 15. The project is equally interested in courses designated as General or Liberal Studies, and in courses in academic subjects examined at O- and A-level, insofar as these are intended to contribute to the student's general education.

PROCEDURE

The project is concentrating on two main questions:

1. What improvements in teaching methods and materials are within the immediate reach of most teachers?

2. How can a school best manage its resources for developing general education and supporting teachers who experiment with new methods?

The methods with which the team are primarily concerned are guided individual study, tutorials and different types of group discussion, and they aim to help teachers try out and assess new methods and develop old ones. To this end, the project, with the help of associate teachers, has been building up a resources bank of some 6,000 looseleaf items from newspaper cuttings and extracts from sociology to photographs and references to film.

Materials from this resources bank have been made available to some 21 trial schools and 250 associate schools in two ways: as *sets* or as *working collections.* A set was a course designed to last between 20 and 40 hours. It had recommended sequences of study, optional and necessary units, and criteria of success. Although sets contained sequences of individual study, they did assume the existence and sustained interest of a teacher who was familiar with the subject matter and had studied the materials. A working collection was not a course; it was a miniature bank of indexed materials on a theme (including teacher's notes and students' guides from any relevant sets) on which teachers could draw to supplement or diversify courses of their own.

The following sets and working collections were produced at trial stage and tested in schools during 1970–1971: *China, Crime, Economics, Freedom and Control, Popular Arts, Population, Social Biology, Censorship, Family, Social Science and Social Responsibility, Nazi Germany, Social History of Modern Britain, Slavery, Education and Society, Japan, Race Relations, the Seventeenth Century.*

The project ran a pilot scheme for the distribution of materials to associate schools, which the publisher will continue when materials are commercially available. Associate schools received a large quantity of trial materials (approximately 1,000 items) in the form of thematic catalogues with teacher's notes and study guides. They could then order multiple copies, for group work, of any items in their catalogues.

PUBLISHED MATERIALS

The first batch of project material will be published by Longman and Penguin during the year 1971–72. Publication will take the form of a subscription service, developed from the pilot associate scheme. Schools and colleges will be offered an annual catalogue of between 100 and 150 printed units (each containing a group of items on a topic, designed to occupy a student for about an hour), together with vouchers enabling them to order multiple copies of those units they select for use by groups of students. The units will be accompanied by teachers' notes on planning courses, using units and relating them to other material and other activities.

Topics covered will include *British Family Statistics Environment, Crime, Freedom and Control, Genetics, Japan, Popular Arts, Science and Responsibility, 17th Century, World Population;* further units to be published during 1972 will include *Africa, Behaviour, China, Computers, Design, Education, Nazi Germany, 19th Centrry, Slavery and Towns.*

RESOURCES CENTRES

In addition to the development of a specimen resources centre at York, the team have assisted a number of schools using their trial materials in the establishment of school resources centres and methods of production, storage and retrieval. Material for teachers on resource management will be published through the subscription scheme. As a result of the increasing interest in the management of resources in schools and colleges, the Schools Council has funded a study of Resources Centres (q.v.).

DIFFUSION AND TRAINING

Over the past year, the project has run a number of one-week courses, three days of which have been spent at York preparing a unit and discussing it with team members, and two days at trial schools (Sevenoaks, Don Valley or Godsall Comprehensive) studying the management of resources in the respective schools' resources centres.

Teachers wanting further information on the availability of courses should contact the project. It is likely that some ex-trial schools will offer autonomous courses for teachers, and that courses will be available at the University of York.

EXAMINATIONS

The materials are not intended as an A-level or O-level course, but may be used to supplement an existing course. Some have also been used in CSE work.

EVALUATION

The materials and the use to which they have been put have been evaluated by means of questionnaires and visits to the trial schools. Associate schools, who have paid a subscription for their material, have not been a part of the evaluation scheme.

RELEVANT PAPERS AND PUBLICATIONS

Schools Council *General Studies 16–18,* (Working Paper 25). Evans/Methuen Educational, 1969, 16p.

FURTHER INFORMATION is available from the project, or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London, WIN 6LL.

APRIL 1971

CONTENT OF GENERAL STUDIES IN SIXTH FORM

DIRECTORS: **Professor R.A.C. Oliver**

LOCATION: Department of Education, The University, Manchester M13 9PL.

DURATION: 1967 – 1969 **AGE RANGE:** 16 – 18 **GRANT:** £3,000

AREA OF ENQUIRY

The object of the research project was to ascertain to what extent there exists a consensus about the desirable content of general studies in sixth forms.

PROCEDURE

A list of 150 topics which have been included in general studies courses, or suggested for inclusion, was compiled and rated by sixth form teachers on a five-point scale to indicate how important they regarded each part of the desirable content of general studies in schools such as their own. The ratings were then analysed.

In a subsidiary investigation a list of 120 topics consisting of 40 from the arts, 40 from social studies and 40 from the scientific field was also rated for their importance in sixth form general studies by 36 lecturers in university departments of education and colleges of education in the Manchester area. Each topic was considered to be either 'conventional' i.e. finding a place in some examination syllabus taught in most sixth forms e.g. Greek literature, the U.S.A., molecular biology, or 'novel', i.e. not usually taught as part of an examination syllabus, e.g. science fiction, race problems, psycho-analysis. Topics awarded a high rating by all three groups (arts, science and social science) included:

1. Cultivation of aesthetic values – such topics as *appreciation of art* and *appreciation of music.*
2. Concern with religion and morals – such topics as *ethics, human rights, religion and life today,* and *comparative religion.*
3. Development of mental skills – *clear thinking* and *creative writing.*
4. Studies of current affairs – many topics, including *current affairs, social implications of science, social problems of Britain today* and *population problems.*
5. Aspects of science – such topics as *scientific concepts, scientific methods, science and everyday life* and *social psychology.*

A paper on this latter study appeared in the *Journal of Curriculum Studies,* November 1970.

A FINAL REPORT

A final report is currently being prepared for submission to the Schools Council with a view to publication.

RELEVANT PAPERS AND PUBLICATIONS

Schools Council *Sixth Form Curriculum and Examinations.* (Working Paper 5) HMSO, 1966 20p.
R.A.C. Oliver and D.G. Lewis, "Elements in Sixth Forms General Studies"; *Journal of Curriculum Studies* Vol. 2 No. 2 November, 1970.

FURTHER INFORMATION is available from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

APRIL 1971

EVALUATION OF THE PRIMARY FRENCH PILOT SCHEME

SENIOR RESEARCH OFFICER: **Mrs. Clare Burstall**

LOCATION: National Foundation for Educational Research, 79 Wimpole Street, London, W.1.
Telephone: 01–935 8335

DURATION: 1964–1974 **AGE RANGE:** 8 - 16 **GRANT:** £87,250 (+ £110,000 from the DES)

AREA OF ENQUIRY

The evaluation of the pilot scheme for the teaching of French in primary schools undertaken by the NFER on behalf of the Schools Council, the Nuffield Foundation and the DES, began in 1964. To date, the research team has concentrated its work on the following areas of enquiry:

1. The effect of the introduction of French on the level of general attainment
2. The assessment of the level of achievement in French, with particular reference to the performance of low ability children
3. The influence of attitudinal factors on success or failure in learning French
4. The organizational and teaching problems posed by the introduction of French in the primary school

The evaluation was initially concerned with two successive year-groups, or cohorts, of pupils, the first of which started French at the age of eight in 1964, the second in 1965. In 1968 the Schools Council agreed to sponsor an extension of the study to a third group of 6,000 children, who would begin French in September 1968.

In 1971 a further grant was given to permit a terminal assessment of the level of proficiency in French reached at the age of 16 by the pupils in the second experimental cohort and by a comparable group of secondary school pupils. (The latter group will share the age-structure and social composition of the main sample, but will not have been taught French in the primary school.) A battery of proficiency tests in French will be constructed, and the attitudes of those learning French in the pilot scheme sample will be compared with those of the comparison sample.

PROCEDURE

During 1963, 124 primary schools in 13 different areas were selected for inclusion in the pilot scheme. For purposes of evaluation each school was assigned to one of three groups, according to their size, type and history of French teaching (i.e. how much French teaching there had been prior to the introduction of the pilot scheme). The first group or cohort of 6,000 children aged 8 began the study of French in 1964; the second cohort of 6,000 in 1965. The schools involved used a number of different courses, including the draft Nuffield *En Avant* materials, *Bonjour Line, Bon Voyage* and *Parlons Français.*

To measure the general level of attainment in schools taking part in the experiment, a battery of general attainment tests (Primary Verbal, Reading, English, Problem Arithmetic and Mechanical Arithmetic) was administered. As regards attainment in French, tests were devised in listening comprehension, oral production and reading comprehension. Attitude towards learning French was tested by means of a questionnaire.

PRELIMINARY FINDINGS

The procedure and preliminary findings of the research team are published in two interim reports: *French from Eight: A National Experiment* published by the NFER in 1968 and *French in the Primary School: Attitudes and Achievement,* NFER, 1970. The latter describes research carried out between spring 1967 and autumn 1969, spanning the transition between the primary and secondary stages of the experiment, and comprises nine sections:

1. General attainment in the primary school - does the introduction of French at the primary level have any marked effect on standards of general attainment?
2. Achievement in French in the primary school.
3. Pupils attitudes towards learning French in the primary school.
4. French in the primary school: the viewpoint of the primary head.
5. The HMI evaluation of the primary stage of the pilot scheme. An analysis of the questionnaire data presented by members of H.M. Inspectorate.
6. Achievement in French in the secondary school.
7. Pupils attitudes towards learning French in the secondary school.
8. French in the secondary school: the viewpoint of the secondary head.
9. The HMI evaluation of the secondary stage of the pilot scheme.

The findings of a complex piece of research are rarely cut-and-dried, but some fundamental trends seem to be emerging from the survey. The most striking outcome is the increased fluency of children taking part in the experiment. The most fluent groups come from classes taken by fluent and enthusiastic teachers who have been trained in primary teaching methods, and whose head teachers are in favour of the introduction of the primary French scheme. Where heads are luke-warm to the scheme, results tend to tail off. It has also been found that children in small rural schools have done better than children in large urban schools.

The fluency is almost entirely verbal, and is particularly marked among girls and children from good home backgrounds.

In a test comparing achievement in French, grammar school pupils were significantly better than comprehensive school pupils and both were better than secondary modern.

As regards attitudes of those learning French, those who have been to France not only enjoy learning French more, but get better results. Those who have access to a language laboratory enjoy using it but most of the pupils dislike passively repeating tape-recorded material in class.

REPORTS

Clare Burstall, *French from Eight: A National Experiment,* NFER, 1968.
Clare Burstall, *French in the Primary School: Attitudes and Achievements,* NFER, 1970, £3.50.

A third report, including data relating to the primary stage of the Third Cohort study, will be published in 1972.

A final report, concerned mainly with the secondary stage of the experiment and including a terminal assessment of proficiency in French at the age of 16 of pupils in the second cohort, will be prepared in 1974.

RELEVANT PAPERS AND PUBLICATIONS

Schools Council, *French in the Primary School* (Working Paper 8), HMSO, 1966
David Rowlands, 'French in the Primary School' in *Developing a New Curriculum,* edited by A.G. Howson, Heinemann for CREDO, 1966.
David Rowlands, 'French' in *Children at School,* edited by A.G. Howson, Heinemann for CREDO, 1969.
Clare Burstall, 'French in the Primary School: Some Early Findings', *Journal of Curriculum Studies,* May 1970.

FILMS

Two 16 mm. films showing good primary teachers in action have been made for the Schools Council. *French from Eight* shows three teachers; one, who is bilingual, uses her own methods and materials; one, whose French was mainly acquired during the war, used 'Bonjour Line'; and the third, who has no formal qualification in French, uses 'En Avant'. *En Avant in Ebbw Vale* is an expanded version of the last part of *French from Eight.*

Both films are in 16 mm colour and run for 30 minutes. Copies can be bought (approx. £50) or hired (£1.63) from the Educational Foundation for Visual Aids, 33 Queen Anne Street, London W.1. *French from Eight* may be seen at the Schools Council Information Centre. This copy may not be loaned.

FURTHER INFORMATION

Copies of the two interim reports and of *En Avant,* the Nuffield Introductory French course, are available for reference only in the Schools Council Information Centre. Further information from Mrs. Burstall or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

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CAMBRIDGE SCHOOL CLASSICS PROJECT

DIRECTOR: **Mr. D. J. Morton**

LOCATION: Cambridge University, 17 Panton Street, Cambridge. **Telephone:** Cambridge (0223) 61458

DURATION: 1966–1972 **AGE RANGE:** 11–16 **GRANT:** £48,245 (+ £48,245 from Nuffield Foundation)

AREA OF ENQUIRY

This project was initially funded by the Nuffield Foundation and was given further support by the Schools Council some months after its inception. The need for a new look at the place of classics in the curriculum arose from the development of comprehensive education, reducing in many cases the scope for Latin and Greek in schools, and in addition a decreasing demand on the part of universities for O-level Latin or Greek as a compulsory requirement for admission to university courses.

The project's two main objectives have thus been:

1. to devise materials and methods for teaching pupils to *read* Latin more fluently, and to enable them to develop an understanding of Roman civilization and its values.
2. to devise a classical studies course in English which will bring the subject within range of pupils of all abilities and so make a contribution from the classics to the humanities area of general education.

PROCEDURE

Language Course. This is a linguistically based course leading to O-level, flexible enough to be taken in three, four or five years. It can also be used by sixth-formers who need O-level Latin. The newly-developed approach enables pupils to read continuous Latin from the start, progressing from specially written stories about people, places and events in the Roman world in the first century AD, to adaptations of original Latin, and finally to the original authors themselves. Much less grammar is formally presented than in traditional courses, and there is no translation from English to Latin.

The materials have been tested in 96 schools in England and Wales and have involved 4,500 pupils. It has been found that pupils of a wider ability range than is usually associated with Latin courses have successfully followed the new course and that a number of these have been diverted to a CSE classical studies syllabus rather than GCE O-level. As regards O-level, this is offered by the Southern Universities Joint Matriculation Board to all schools using the Cambridge Latin Course.

MATERIALS

The course consists of five units, and is published by Cambridge University Press. Units 1 and 2 are published. Unit 3 is expected in September 1971, and Units 4 and 5 during 1972.

Unit 1, based on life in Pompeii in AD 79. This will provide a term's work for those working to O-level in 3 years, more for those taking the course more slowly

Pupil's material – a wallet containing 12 pamphlets and a vocabulary	£1.20
Teacher's material – a handbook explaining the principles of the course and giving suggestions for the use of the material.	£1.00
For class and teacher – a tape of recorded extracts from the texts.	£4.52 (inc. P.T.)
– 60 coloured slides of Pompeii and Herculaneum	£7.50

Unit 2, set in Alexandria and Britain. This will provide the second half of the first year's O-level course.

Pupil's material – a wallet of 8 pamphlets in Latin, a vocabulary and a grammar.	£1.20
Teacher's material – a handbook.	£1.00
For class and teacher – a tape	about £5.00
– a set of 60 colour slides.	about £7.50

Unit 3, set in Bath, Chester and Rome. This covers the first part of the second year's work.

The materials and cost will be similar to Units I and II.

Units 4 and 5. The textual material consists of selections from Pliny, Tacitus, Catullus, Virgil and Ovid; Unit 5 leads naturally to the reading of set texts in the O-level year. Materials are similar to previous units.

Foundation Course. This is a non-linguistic course entirely in English designed to introduce classical civilization to pupils of all abilities in the 11–13 age group. It consists of a series of folders, the first five of which are:

Troy and the Early Greeks
The Gods of Mount Olumpus
Greek Religion
Athens, Sparta and Persia
Greek Festivals

Each folder contains work sheets, information sheets, drawings and photographs and is designed for use by groups of five or six children. Each will cost about £2.25 and the first will be available at the end of 1971. A teacher's handbook is in preparation.

The course presupposes co-operation between teachers of various subjects, and a minimum time allowance of two periods a week. The materials have been tested in some 66 schools and revised in the light of these trials.

EXAMINATIONS

GCE O-level is offered to all schools taking the Cambridge Latin Course by the Southern Universities Joint Matriculation Board.

DIFFUSION AND TRAINING

In-service training courses for teachers are being run at Durham and at Cambridge in July 1971. Further details of these and future courses are available from the project.

EVALUATION **Evaluator: Miss Pat Story**

The project's evaluation officer has been concerned with assessing the progress of the Latin course in schools using experimental material, and with helping to revise material for publication in the light of suggestions and criticisms made by the schools.

RELEVANT PAPERS AND PUBLICATIONS

Bulletin No. 1: *Towards a New Latin Reading Course*	15p from the project
Bulletin No. 2: *A Non-Linguistic Foundation Course*	25p from the project

FURTHER INFORMATION

All published materials are available for reference only in the Schools Council Information Centre.

Further information is available from Miss Story at the project, or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

MODERN LANGUAGES PROJECT
(formerly the Nuffield Foreign Languages Teaching Materials Project)

DIRECTOR: **Professor A. Spicer (to December 1969)**
Mr. D. Rowlands (from January 1970)

LOCATION: University of York, Micklegate House, Micklegate, York YO1 1JZ **Telephone:** York (0904) 27844

DURATION: 1963–1973 (Schools Council support from 1967)

AGE RANGE: French 8–16 (Schools Council: 13–16) Spanish, Russian and German 11–16 (Schools Council: 13–16)

GRANT: £831,000

AREA OF ENQUIRY

The project was established to continue the work begun in 1963 by the Nuffield Foreign Languages Teaching Materials Project. At that time the Foundation commissioned French teaching materials for the age range 8–13 and, over the next two years, the scope of the project was extended to include the provision of materials in Spanish, Russian and German for the age range 11–13. As each section of the project completed the work sponsored by the Foundation, the Schools Council assumed financial responsibility to enable the project to produce continuation materials in French, Spanish, German and Russian for the age range 13–16. The project is attached to the Language Teaching Centre, which is directed by Professor Hawkins.

The fundamental objective of the materials in all languages is to teach pupils to understand, speak, read and write the language, in that order, rather than to teach them about it. Early lessons are purely oral and aim at fluent control of a limited number of structures of the language, rather than a large vocabulary. Reading, writing and composition (including project work) are introduced, in turn, in subsequent stages, and the emphasis on these skills increases as the courses progress. Teaching points are carefully graded and the language introduced is selected with reference to frequency, 'teachability', usefulness in everyday situations and suitability to the pupils' age and interests. Pupils are also introduced to the culture and way of life of the people whose language they are learning.

MATERIALS

French. *Section organiser: Michael Buckby*

The introductory French course *En Avant,* is a five year course intended for use in the last three years of primary school and the first two years of secondary school with pupils of all abilities. The course provdes a variety of teaching materials which, *in the primary phase,* have been designed for use with large classes and by non-specialist teachers of French.

The materials, details of which are given below, were tested in a large number of schools and revised before final publication. In addition, the National Foundation for Educational Research is carrying out an evaluation of the teaching of French in primary schools sponsored by the Schools Council and the D.E.S. Pupils' attainments over the whole ability range, teacher attitudes and the effects on schools' organisation and curriculum are being investigated. The first report - *French from Eight* was published in 1968 and the second - *French in the Primary School* - in 1970. A third cohort is currently being evaluated, and a third report on all three cohorts will be published in 1972; a final report will be published in 1974. For further details see Evaluation of Primary French Pilot Scheme

The 13–16 continuation materials were originally planned as two courses: *Avant Garde* for pupils likely to take GCE O-level and *Dans le Vent* for CSE or non-examination pupils. In the light of experience in some 60 trial schools, however, a single system of materials with a common core element is now planned, with a range of additional materials to cater for both the more and the less able.

Published materials - French

A. *En Avant* - Nuffield Introductory French Course - published by E.J. Arnold and Son Ltd., Butterley Street, Leeds LS10 1AX.

N.B. Prices include teacher's books and pupils' materials.

Primary Stages:
Stage 1, Part A: 20 lesson units, including teacher's book, figurines, flashcards and 12 tapes. £26.57½ + £8.90 P. Tax.
Stage 1, Part B: 20 lesson units, including teacher's book, figurines, flashcards, wall charts and 12 tapes. £20.90 + £7.25 P. Tax.
Stage 2: 20 lesson units, including teacher's book, readers, posters reading cards, display board and 10 tapes. £32.32½ + £7.60 P. Tax.

Transition Stage:
Stage 3: 15 double lesson units, including teacher's book, readers, reading sheets, workbooks, posters, wallcharts, figurines, maps, games, assignment cards and 9 tapes. £41.05 + £6.94 P. Tax.

Secondary Stages
Stage 4, Part A: including pupils' and teacher's books, readers, 4 tapes, 7 filmstrips. £43.50 + £2.20 P. Tax.
Stage 4, Part B: To be published in September 1971.

B. *Avant Garde* - Schools Council continuation material 13–16. To be published by E.J. Arnold from 1972 onwards.

German. *Section organiser: Antony Peck*
This course, intended for average and above-average children, is designed to last for five years (11–16), at approximately four 40 minute periods a week, although gifted pupils could probably complete the course in four years.

The Nuffield Introductory Course - *Vorwarts* - intended for the first two years of secondary school, has been published and Schools Council continuation materials are currently being tested in 30 schools.

Published materials - German
Vorwarts - published by E.J. Arnold & Son Ltd., Butterley Street, Leeds LS10 1AX.

N.B. Prices include teachers' books and one copy only of each of the pupils' books.

Stage 1, Part A (about 20 weeks' work) including teacher's book, pupils' work book, 6 tapes, 6 filmstrips, flashcards, wall maps. £28.15 + £4.03½ P. Tax
Stage 1, Part B (about 20 weeks' work) including teacher's book, pupils' reading, writing and work books, flashcards, 5 tapes, 8 filmstrips, wall map, railway timetable. £34.50 + £4.42 P. Tax.
Stage 2, Part A including teacher's book, pupils' readers and writing books, 5 tapes, 8 filmstrips flashcards, wall maps. £37.75 + £4.12½ P. Tax
Stage 2, Part B including teacher's book, pupils' readers and writing books, 6 tapes, 8 filmstrips flashcards, wall map. £34.00 + £4.67½ P. Tax.

Continuation materials (13–16) will be published by E.J. Arnold and provisional dates are as follows: *Stage 3:* May 1972; *Stage 4:* January 1973; *Stage 5:* October 1973.

Russian. *Section organiser - David Rix*
This course, as with German, is intended for average and above-average ability children and is designed to last for five years, although gifted pupils could complete the course in four years.

The Nuffield Introductory Course - *Vperyod!* - intended for the first two years of secondary school has been published and Schools Council continuation materials are currently being tested in some 30 schools.

Published materials - Russian
Vperyod! - published by Macmillan & Co., Houndmills, Basingstoke, Hants.

N.B. Prices include a teacher's book, but no pupils' material.

Stage 1: (18 introductory lessons and 12 lesson units) including teacher's book, pupils' book, 10 filmstrips, 7 tapes, flashcards. £44.50 + £9.32½ P. Tax. Pupils' books 25p. each.
Stage 2: (12 lesson units) including teacher's book, pupils' book, 7 tapes 10 filmstrips, flashcards, playing cards, cardboard money. £48.00 + £13.57 P. Tax. Pupils books 52½p. each.
Stage 3: (12 lesson units) including teacher's book, pupils' book, 12 filmstrips, 6 tapes, flashcards. £39.00 + £8.42 P. Tax. Pupils books 60p. each.

Continuation material will be published by E.J. Arnold and provisional dates are as follows: *Stage 4:* September 1971; *Stage 5:* September 1972.

Spanish. *Section organiser - Robert Clarke*
This course, intended for average and below average ability children is designed to last for five years at approximately four 40 minute periods a week.

The Nuffield Introductory Course - *Adelante* - intended for the first two years of secondary school has been published, and Schools Council continuation materials are currently being tested in some 30 schools.

Published materials - Spanish
Adelante - published by Macmillan & Co., Houndmills, Basingstoke, Hants.
N.B. Prices include a teacher's book but no pupils' material.

Stage 1: (20 lesson units) including teacher's book, figurines, flashcards, posters, display board and teazle discs, 11 tapes. £37.25 + £14.49 P. Tax.

Stage 2A: (10 lesson units) including teacher's book, pupils' readers and workbooks, 6 tapes, flashcards, 8 filmstrips, wallmap. £39.00 + £7.83 P. Tax. Readers 22½p each. Workbooks 12½p. each.

Stage 2B: (8 lesson units) including teacher's book, pupils' readers and workbooks, 8 filmstrips, 10 flashcards, 4 tapes. £33.00 + £5.38½ P. Tax. Readers 22½p. each. Workbooks 12½p. each.
Continuation material will be published by E.J. Arnold and provisional dates are as follows: *Stage 3:* mid 1971; *Stage 4:* April 1972.

EXAMINATIONS AND ASSESSMENT

Arrangements have been made with the GCE examining boards for pupils in the schools testing draft materials to take alternative O-level examinations in French, Spanish, Russian and German. It is hoped that these examinations will ultimately be open to any pupils. The Joint Matriculation Board has devised a Spanish examination; Cambridge an examination in Russian; AEB an examination in German; and Oxford an examination in French. The division of marks has been roughly: writing 25%, oral 25%, listening 20%, reading 20%, and special project 10%.

A number of teachers in trial schools have collaborated to produce a Mode 3 CSE in Russian and in Spanish, which have been presented individually to their boards. Teachers of German are intending to produce a Mode 3 during 1971, and a French Mode 3 is currently under discussion for 1972.

The project evaluation unit is producing in addition a number of performance tests for each stage of the published materials, to enable teachers to assess their pupils' progress in listening, speaking, reading and writing.

EVALUATION

The materials are all tested in trial schools and revised in the light of teachers' comments, questionnaires and visits to schools by the evaluation team. See also Evaluation of Primary French Pilot Scheme

TRAINING AND DIFFUSION

The project has not organised a large-scale diffusion programme, apart from courses for teachers in trial schools, and would emphasize that although there is no need for formal training to use the materials, the stress on aural and oral language teaching calls for teachers who are fairly fluent in their respective language. Local courses and teachers workshops at Teachers' Centres have proved of very considerable benefit, both at primary and secondary level.

RELEVANT PUBLICATIONS

Schools Council *French in the Primary School,* (Working Paper 8), HMSO, 1966, 42½p.
Schools Council *Development of modern language teaching in secondary schools,* (Working Paper 19), HMSO, 1969, 22½p.
'Modern Languages: Nuffield and Schools Council' *Dialogue 5,* February 1970.
Clare Burstall, *French from Eight,* NFER, 1968, 75p.
Clare Burstall, *French in the Primary School,* NFER, 1970, £3.25.
Micklegate No. 1, September 1970, No. 2, March 1971. A newsletter available from the project.
Onwards No. 1. A collection of papers available from the project at 15p.

N.B. A large number of Child Language Survey publications, language teaching Reports and Occasional Papers may be obtained from the project. List free on request.

FILMS

Two films showing good primary teachers in action were made in 1967 for the Schools Council. *French from Eight* shows three teachers; one, who is bilingual, uses her own methods and materials; one, whose French was mainly acquired during the war, uses 'Bonjour Line', and the third, who has no formal qualification in French, uses 'En Avant'. *En Avant in Ebbw Vale* is an expanded version of the last part of *French from Eight*.

Both films are in 16 mm. colour and run for 30 minutes. Copies can be bought (approx. £50) or hired (£1.63) from the Educational Foundation for Visual Aids, 33 Queen Anne Street, London, W1.

FURTHER INFORMATION

All items listed above, and copies of all published materials are available for reference only in the Schools Council Information Centre.

Further information is available from the project, or from Mrs. Gillian Box at the Schools Council Information Centre, 160 Great Portland Street, London, W1N 6LL.

APRIL 1971

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FREE TO MOVE: A FILM ON PHYSICAL EDUCATION IN THE PRIMARY SCHOOL

ADVISER: **Mrs. Eugenie Fraser, Physical Education Adviser for Hampshire.**

SHOT DURING: 1969–1970 **AGE RANGE:** 3–11 **GRANT:**£15,000

This film was planned by a Working Party on physical education as the most suitable means of conveying the basic principles and philosophy underlying physical education, and of illustrating good practice. A large number of schools of all types throughout England and Wales were visited. The eight selected for use in the film represent schools in old and in new buildings with varying facilities, in differing areas and with classes of different ages.

Free to Move is primarily directed towards teachers and students to give help in the practical teaching situation. Physical education is concerned not only with physical well-being but with the education of the child, as a whole, and the film illustrates the ingredients of a varied and widely based programme and the way in which skilled teachers extend the resources of their children through movement. It shows, too, how as the child moves up from the nursery school the teacher can harness the drive which we call play and channel it in such a way that the child becomes more aware more skilful and gains more knowledge of himself through this experience.

The early part of the film shows young children moving in a variety of ways, motivated by apparatus and natural obstacles such as walls and trees, by the desire to explore game-like situations, to move in water, or to express themselves through dance or dramatic play.

Examples of the results of good teaching in swimming and games with older children lead into the second part of the film This is devoted to lessons with infant and junior children, with an emphasis on gymnastics and dance; the teachers concerned show the way in which, by observation and sensitive guidance, they are able to achieve a high level of skill and involvement. Each of these teachers shows how discoveries made by the children in their physical education lessons have sparked off further exploration in the classroom and vice versa. For example, one class relate their movements to mathematics in a P.E. lesson involving bilateral and rotational symmetry; another make models of animals, write about them and then act out their movements.

FILM DETAILS The film was made and is distributed by Southern Film Productions Brockenhurst Film Studios, Brockenhurst, Hants SO4 7RD, (Telephone: Brockenhurst (05902) 3434). It was directed by Brian Lewis, produced by Derek Monk and Ted Channell with a commentary by Steve Race. It is in 16 mm colour and runs for 35 minutes.

Charges Sale £65 (in this country).
Hire £2,50 (for first day) and £1.25 for each following day.
Carriage and insurance £1.00 extra.

Copies for sale or hire in the USA from the Film Bureau, 267 West 25th Street, New York NY 10001.

RELEVANT PUBLICATIONS
E.R. Fraser, ' The Schools Council P.E. Film' *Dialogue 4,* November 1969.

FURTHER INFORMATION The film may be seen at the Schools Council Information Centre 160 Great Portland Street, London WIN 6LL by arrangement with Mrs. Gillian Box. *This copy may not be loaned.*

Three further films are currently being prepared from material not used in this film. These will be on Agility, Games and Swimming, these will each last from 6 to 15 minutes and should be available later in 1971.

MUSIC EDUCATION FOR YOUNG CHILDREN

DIRECTOR: **Dr. A. Bentley**

LOCATION: Music Section, School of Education, University of Reading, London Road, Reading RG1 5AQ.
Telephone: Reading (0734) 85234

DURATION: 1970–1975 **AGE RANGE:** 3–11 **GRANT:** £38,500

AREA OF ENQUIRY

This research and development project was established with the following aims:

1. To increase understanding of *how* children learn in music

2. To clarify and define the aims of music education for nursery and primary school children

3. To produce guides and materials which will help teachers to achieve these aims

PROCEDURE

Since the project began in October 1970 the team have been engaged on three specific investigations:

1. A general survey of music education in primary schools. The main object of this survey is to find out as much as possible about present conditions so that when the time comes to produce guides and other materials for teachers, the nature of the demands will be more precisely known. The survey conducted mainly through questionnaires is concerned with the staffing of music, the degree of specialisation in primary schools, the attitudes of teachers towards the aims and content of the music programme, and their opinions about the attitudes of children to different musical activities. Although some preliminary results have been reported, information is still coming in, and will probably continue to come in for some time

2. A programme of testing relating to the understanding of the basic musical concepts of loudness, pitch and duration

3. An investigation into the attitudes of children of different ages towards different approaches to and aspects of school music.

In addition to these specific investigations the team have been visiting schools over a wide area to see a cross-section of music teaching, with examples of different approaches. It is proposed to form a teachers' group within the near future to act as a working party for the purpose of meeting regularly for discussion and the development and testing out of teaching materials and ideas. Plans for the future are likely to centre a good deal round the work of this teachers' group. Further research is planned into the early development of musical abilities and it is proposed to develop a series of tests of musical achievement.

RELEVANT PAPERS

First report and plans for the future, February 1971. A limited number of copies of this report, prepared by the project for its Consultative Committee, are available from the School Council Information Centre.

FURTHER INFORMATION is available from the project director, or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London, WIN 6LL

ART AND CRAFT EDUCATION

DIRECTORS: **Miss Audrey Martin, Miss Seonaid Robertson, Mr. Michael Laxton.**

LOCATION: Goldsmith's College, University of London, New Cross S.E.14. **Telephone:** 01–692 5858

DURATION: 1969–1972 **AGE RANGE:** 8–13 **GRANT:** £40,650

AREA OF ENQUIRY

The aims of this project are:

1. to make known and co-ordinate advances in art and craft teaching, in particular bridging the gap between primary and secondary schools

2. to consider the contribution which arts and craft as an autonomous study can make to children's growth and also their contribution to intergrated studies

3. to undertake pilot experiments in the in-service education of teachers

PROCEDURE

The team considered that its purpose should be to build up records of individual situations which are likely to be significant for other teachers. As a result of the first year's survey of current practice, the project team has decided a) to concentrate on examining the work of children in varying situations, rather than on any models of curriculum, b) that a main technique will be observation and recording what is actually going on in classrooms; and c) that these observations shall form the basis of materials to be used to encourage discussion and self-appraisal by those concerned with art and craft education.

The team has been concerned to identify a few people with potential for reform and development, and to help them to build up networks of shared action and interaction which may outlive the project's life span. A great deal of time too has been spent on detailed observation and recording of groups in a variety of schools with specific objectives in mind and it is planned to continue these depth studies during the next year.

MATERIALS

The materials being developed for publication will probably consists of a) objective evidence of children's work and of working situation; b) records of work and c) theoretical statements which will be connected as closely as possible to these specific examples so as to draw attention to the issues involved. These materials will be offered to teachers' centres and in-service courses for comment and consideration.

DIFFUSION AND TRAINING

A seminar for teachers, lecturers, artists and architects on the Nature of Work with Materials was held at Goldsmith College in July 1970, when discussions were focused on the nature of creative-inventive work involving materials and the conditions they found acceptable or necessary in which to work.

RELEVANT PAPERS AND PUBLICATIONS

M. Laxton 'A development project on Middle School Craft' *Studies in Craft Education*, January 1970.
'Introducing Art and Craft Education 8–13' *Dialogue* 5, February 1970.
K. Gentle 'Art and Craft Education 8–13 year olds' *Art and Craft,* July 1970.
K. Gentle 'Art and Craft Education 8–13', *Ideas,* January 1971.
K. Gentle 'The Middle Years', *Teachers World Art and Craft Supplement,* 12 February 1971.

FURTHER INFORMATION is available from the project directors or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London, WIN 6LL.

April, 1971.

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PHYSICAL EDUCATION IN SECONDARY SCHOOLS

DIRECTOR. **Dr. J.E. Kane**

LOCATION: St. Mary's College of Education, Strawberry Hill, Twickenham, Middlesex. **Telephone:** 01–892 0051

DURATION: 1970–1971 **AGE RANGE:** 11–18 **GRANT:** £7,000

AREA OF ENQUIRY
This project was established on the recommendation of the Secondary Working Party of the Physical Education Committee. It was felt that before any fundamental thinking could be undertaken with a view to assessing the value and purpose of current curricular in physical education, it was vital to have up-to-date information on present trends in schools. The aims of the project are:

1. To discover the facts about the place and the programme of physical education in secondary schools
2. To consider how far present practices are related to the aims which were published in *Dialogue* 1, page 15, and circulated to interested professional organisations
3. To provide information of these practices to those concerned with physical education
4. To use the information as a basis for a future curriculum development project

Typical items on which information is needed are the degree of compulsion to take part in some form of physical education at different stages in the secondary school, period allocation in school timetables; the introduction and range of options; out of school activities; staffing and facilities; the criteria by which the physical education curriculum is constructed; attitudes and motivation.

PROCEDURE
A series of three questionnaires (one for Headteachers, one for Heads of department and one for other PE teachers) has been prepared to collect information about the curriculum structure, the objectives being pursued, the methods and materials being used, and the opinions and values held by teachers. These questionnaires have been administered to a one-in-ten stratified random sample of secondary schools in England and Wales and the results are being analysed.

From the data obtained, an attempt will be made to consider the relation between the stated aims of physical education (see *Dialogue* 1) and current practices in schools, and to relate attitudes and motivations as measured to current practice.

As a result of this analysis, a decision will be made as to what, if any, further development work is necessary.

FINAL PUBLICATION
A research report will be submitted to the Schools Council at the conclusion of the project, with a view to publication.

RELEVANT PUBLICATIONS
'Miscellany - Comment on P.E. Wanted'. *Dialogue* 1, September 1968.

FURTHER INFORMATION is available from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London WIN 6LL.

April 1971

ARTS AND THE ADOLESCENT

DIRECTOR: Mr. P. Cox

PROJECT ORGANISER: Mr. M. Ross
RESEARCH DIRECTOR: Mr. R. Witkin

LOCATION: Institute of Education, University of Exeter, Gandy Street, Exeter EX4 3QL.
Telephone: Exeter (0392) 78521

DURATION: 1968–1972 **AGE RANGE:** 13–16+ **GRANT:** £41,500

AREA OF ENQUIRY

This curriculum study was set up in 1968 as part of the Schools Council's programme for the young school leaver, to discover:

1. What methods and materials in the fields of visual art, music, dance, drama and poetry are most likely to elicit a lively response among young people

2. how young people view their own involvement in the arts both in and out of school and how much connection there is between these two forms of often disparate activity

3. what connection can be made and how much transfer of interest is possible, between one art and another and between each art and other subjects in the curriculum

PROCEDURE

The work of the project has been constructed in three complementary phases - 1. research into all aspects of arts education; 2. organisation of these facts in a manner that is both effective and relevant to the teaching of the arts in schools; and 3. dissemination of such reports or curriculum materials as are produced within the context of a teacher-pupil dialogue. Primary - or original - research has included formal research by means of questionnaires and interviews in 36 pilot schools and at present detailed depth studies are being made in six schools where a team member has spent two weeks observing arts lessons, interviewing pupils and staff and administering questionnaires and a pupils' creativity test. The project is seeking information about what takes place in arts lessons and why, about the priorities and attitudes of arts teachers and pupils, the place of the arts in our schools and in the lives of children generally, and finally about the formal structure of the school, methods of teaching and their comparative effectiveness. There is also less formal research by letter and visit to assess attitudes, opinions and problems of people working in various aspects of arts education.

Secondary research covers the extraction of relevant data from statistical reports, educational pamphlets and learned journals.

Organisation of facts is guided by a conceptual framework, within which the project is seeking to establish a viewpoint on what should be done about the teaching of the arts in schools and how it relates to all else within the life of the child. Using Piaget as a basic model, the arts curricula in schools are considered as the means whereby the child's "intelligence of feeling" is made to grow.

A teacher - project dialogue is essential for the construction and communication of curricula and it is hoped both to establish a number of regional working groups where the project can co-operate with teachers on curriculum design, and to devise means of support for teachers throughout the country.

CONFERENCES

An international summer school in Arts Education will be held at Rolle College, Exmouth, Devon from 12th - 24th July 1971.

A national seminar on 'The Arts and the Education of the Adolescent' will be held at Exeter University from 17th to 19th September 1971.

A conference entitled 'The Arts and the Adolescent: a dialogue between arts teachers and the project will be held at Dartington Hall College of Arts, Totnes, Devon, from 7th - 9th January 1972.

Further details of all these from the project organiser.

FINAL PUBLICATION

An Interim Report has been written by the project team for submission to the Schools Council. This will not be published but will form the basis of much that will be included in the final report. A synopsis is available from the project.

The project is also producing a teacher's guide supported by a variety of illustrative materials such as records, tapes, films, and slides designed primarily for teachers' centres. These should be available in 1972.

RELEVANT PAPERS AND PUBLICATIONS

R.W. Witkin 'Social Class Influence on the amount and type of Positive Evaluation of School Lessons', *Sociology*, later in 1971.

FURTHER INFORMATION is available from the project organiser or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

APRIL 1971

DESIGN AND CRAFT EDUCATION

DIRECTOR: **Professor S. John Eggleston** **RESEARCH FELLOWS:** **Mr. A. R. Pemberton and Mr. D. Taberner**

LOCATION: University of Keele, Department of Education, Keele, ST5 5BG. **Telephone:** Keele Park (0782 71) 371

DURATION: 1968–1973 **AGE RANGE:** 13–16+ **GRANT:** £60,850

AREA OF ENQUIRY

The project, previously known as the Research and Development Project in Handicraft, is examining an approach to education in which pupils, particularly those who will be spending an extra year in full education, using tools and materials are enabled to explore the adult world.

The development project was set up as a result of a feasibility study which took as its main areas of concern:

1. the identification and classification of educational objectives in handicraft teaching

2. a survey of the range of handicraft activities currently being undertaken in secondary schools, in order to identify the most promising methods of attaining educational objectives

3. an examination of possible methods of validating the effectiveness of the new and existing handicraft curricula in attaining educational objectives

This study was subsequently published as a Schools Council Working Paper 26: *Education through the use of materials.*

PROCEDURE

The workshop based project is intended to give young people tangible means of expressing themselves at home and at work, in community service and in leisure, to help them develop and explore the range of options open to them and the capacity to make the decisions arising from this. The project is not developing a 'course' as such, but a selection of stimulus materials for teachers. These are based on a design process or other problem-solving approach so that the traditional emphasis on doing and making in school workshops and studies is joined by a parallel emphasis on thinking. Not only will students be undertaking skilled activities but they will also be performing diagnostic and creative roles. Much of the work at trial stage has involved the co-operation of teachers not only in the 'materials' subjects, but also in the humanities and the sciences. The project is working in five main areas:

Materials Discovery and Design. The development of the design process, upon which this section is based, is fundamental to the project's thinking. Thus given a problem, such as the need of a disabled person for a simple piece of equipment that will enable him to perform a particular action, students are encouraged to identify and specify the problem e.g. what is it for, what materials are advisable, accept the restraints, engage in predesign and research discussion with other students and teachers, produce models in card, clay etc., consolidate workable solutions into controlled areas of manufacture, discuss and modify, and finally produce a solution.

Materials and Domestic Life. Here the pupil is working not only with wood, but with a whole range of materials from plastics to new decorating materials. Work undertaken may include conversion, renovation and maintenance of the home, interior and exterior decoration, layout of gardens, minor building projects and appreciation of household equipment. The whole field of consumer expertise is an integral part of this work and again a problem solving approach is adopted.

Materials and Community Development. Pupils are encouraged to identify school and community needs, translate these into design terms, formulate proposals and implement these under staff guidance. Projects undertaken in trial schools include working with geriatric patients, preparing play equipment in educational priority areas and restoring parts of Fountains Abbey.

Materials and Work. In association with colleges of further education, attempts are being made to explore the implications of link courses. Production line situations in the school workshop are being developed for short term adoption to include concepts such as cost-benefit analysis, quantity and variation and labour intensity. Besides school based 'Factory Day' approaches the project is also interested in developing schemes of 'work experience'.

Materials and Leisure. Included in this section are suggestions as to ways in which leisure time can be used, ranging from toy and model making, through photography, karting and land yachts to the theatre.

MATERIALS

Trial materials collected under these five topics, include notes on the derivation of objectives, teachers' notes, suggestions for course content, including films and slides, and questionnaires to aid the central team's assessment of the materials. They have been devised in association with teachers in Cheshire, Hertfordshire, Leeds, Leicestershire, London (ILEA), N. Wales, Staffordshire, West Riding, Wiltshire, N. Ireland and BFES (Germany).

Published materials should be available in 1972 and will include a teacher's master manual outlining the project's approach, teacher's guides to the areas outlined above, and supportive material for use with pupils, including slides, tapes, photographs and printed matter.

EXAMINATIONS AND ASSESSMENT

Preliminary talks with representatives of examinations boards will be pursued further during the next two years to explore ways in which the types of work being developed may be included in pupils' examination assessments.

EVALUATION

Evaluative devices have been built into the trial materials, and the next two years will provide the team with greater opportunity for an evaluation of these and further materials, and the project's methods.

DIFFUSION AND TRAINING

Increasing numbers of schools have become associated with the project through subscriptions to its termly bulletin *Survey*. Summer schools for teachers are planned during the next two years and it is hoped to develop a core of well-informed teachers and lecturers who will, through close association with the project team, be able to initiate work in local authorities and area training organisations. Further details of courses are available from the project.

RELEVANT PAPERS AND PUBLICATIONS

Schools Council, *Education through the Use of Materials* (Working Paper 26) Evans/Methuen Educational, 1969, 25p.

Schools Council, *Choosing a curriculum for the Young School Leaver* (Working Paper 33), Evans/Methuen Educational, 1971, 26p.

Survey: a termly bulletin available from the project at 50p. p.a. Current copies can be seen at all teachers' centres.

S.J. Eggleston, 'New trends in the school workshop', *Times Educational Supplement,* 24 July, 1970.

Francis Zanker and A. Pemberton, 'Teachers Courses for the 70's, *Studies in Design Education and Craft,* Vol. 3, No. 1, Winter 1970.

'Design and Craft', *Dialogue* 8, May 1971.

TELEVISION

A series of six programmes entitled *Design Education – New Trends in School Workshops* and based on some of the project's trial schools was transmitted on BBC2 at 7.05 on Tuesdays, from 13 October 1970.

FURTHER INFORMATION

Copies of trial materials and a complete set of *Survey* are available for inspection only in the Schools Council Information Centre.

Further information from the project, or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

PRIMARY SCHOOL MATHEMATICS – EVALUATION STUDIES

DIRECTOR: **Professor J.Wrigley**

LOCATION: Schools Council, 160 Great Portland Street, London W1N 6LL **Telephone:** 01–580 0352

DURATION: 1971–1972 **AGE RANGE:** 5–11 **GRANT:** £6,750

AREA OF ENQUIRY

In the last twenty years or so there has been considerable change both in the content and style of teaching in primary mathematics, exemplified by the publications of the Nuffield Junior Mathematics Project (q.v.), Schools Council, Associations of Mathematics Teachers etc. The Mathematics Evaluation Advisory Committee thus recommended to the Schools Council the establishment of a number of exploratory studies of new methods to identify and describe the major approaches which appear to exist in the teaching of mathematics in primary schools.

PROCEDURE

Of the various methods which have been discussed, the most promising appears to be when teachers are asked to describe their own approach to teaching by presenting them with a series of alternatives in content and style and asking them to check which, if either, they choose in their day to day working. This method and others which might be used, will need to be developed to examine their consistency and validity.

The research will be undertaken by a member of the Schools Council's research team who, by developing these techniques and analysing the data collected, will be responsible for discovering which methods would be most useful in a major study of the effects of changes in primary teaching.

FURTHER INFORMATION is available from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London, W1N 6LL.

APRIL 1971

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NUFFIELD MATHEMATICS

DIRECTOR: **Professor G. Matthews**

LOCATION: Nuffield Foundation, Nuffield Lodge, Regents Park, London N.W.1. **Telephone:** 01–722 8871

DURATION: 1964–1971 **AGE RANGE:** 5–13 **GRANT:** Nuffield grant only.

The aim of the project is to devise a contemporary approach to mathematics for children from 5–13. The teachers' guides (no pupils' materials have been produced at primary level) do not comprise an entirely new syllabus. The stress is on *how to learn,* not on what to teach. Running through all the work is the central notion that the children must be free to make their own discoveries and think for themselves, and so achieve understanding, instead of learning by heart mysterious drills. To achieve understanding young children cannot go straight to abstractions – they need to handle things ('apparatus' is too grand a word for at least some of the equipment concerned – conkers, beads, scales, globes and so on).

The books have been written by teachers and are intended as guides to an improved way of teaching. They are not guides to the only 'right' way of teaching and development from them is as important as, if not more important than, the guides themselves.

One of the main objectives of the guides is to trigger off thought and discussion in teachers' centres. The trial editions were tried out in hundreds of schools, and have been revised for publication in the light of feedback from the centres and from the schools themselves.

MATERIALS

The guides fall into three main categories:
Teachers' guides which cover three main topics.
Computation and Structure
Shape and Size
Pictorial Representation and Graphs leading to Algebra

In the course of these guides the development of mathematics is seen as a spiral. The same concept is met over and over again but illustrated in a different way at each stage. The books do not cover years, nor indeed any specific time: they simply develop themes and therefore help the teacher to see how to enable each child to progress at its own pace. They contain direct teaching suggestions, examples of apparently un-mathematical subjects, and situations which can be used to develop a mathematical sense, examples of children's work and suggestions for class discussions and out of school activities.

Weaving guides. These are single-concept books giving detailed instructions or information about a particular subject, e.g. how to build a pond. They are not related to any specific guides but are intended to be referred to throughout the work.

Check-up-guides which are being prepared by the Institut des Sciences de l'Education in Geneva under the general supervision of Piaget (see Development of Individual Assessment Tests.)

PUBLISHED MATERIAL

The guides are published by W & R Chambers, 11, Thistle Street, Edinburgh EH2 1DG, and John Murray, 50, Albemarle Street, London, W1X 4BD. Orders should be placed through booksellers or the usual educational suppliers.

Titles are as follows (* denotes the title is not yet published):

Introductory Guide			
	I Do, and I understand An introduction to the project	1967	45p.
Teachers' guides			
1	*Pictorial Representation*	1967	55p.
1	*Beginnings*	1967	85p.
1	*Mathematics Begins*	1967	65p.
2	*Graphs leading to Algebra*	1969	65p.
2	*Shape and Size*	1967	75p.
2	*Computation and Structure*	1967	85p.
3	*Graphs leading to Algebra**		
3	*Shape and Size*	1968	65p.
3	*Computation and Structure*	1968	65p.
4	*Computation and Structure*	1969	70p.
4	*Shape and Size*	1971	60p.
5	*Computation and Structure**		
The Story so Far An outline of, and index to, the first nine teachers guides.		1969	35p.
Into Secondary School The aims of the project as they affect secondary or middle school children.		1970	25p.
Maths with Everything A book for parents to accompany the film, *Maths with Everything* (see over).		1971	20p.

Computers and Young Children *
Guide to the Guides *
Logic *
Logic and Computers *
Mathematics in Practice *
Ideas for children of 11 who are ready to apply their mathematical knowledge to the environment.

Problems – Green set	1969	£1.20p. Cards only 45p
Problems – Purple set	1971	£1.30p. Cards not sold separately
Problems – Red set	1970	£1.20p. Cards only 40p.

Teachers' books and cards for young secondary school children.

Weaving guides

Desk calculators	1967	15p.
How to build a pond	1967	55p.
Environmental geometry	1969	£1.00p
Probability and statistics	1969	75p.

Modules
Some 20 modules, for lower secondary school children are being prepared. Titles include *Decimals, Angles and Bearings, Irrational Numbers, Integers, Number Patterns, Symmetry, Similarity, Vectors, Area, Functionality, Matrices, Co-ordinates, Topology, Speed and Gradiant* and *Indices and Molecules*

Check-up-guides

Checking up 1.	1970	50p.
Checking up 11 *		

Other books

Your Child and Mathematics, W.H. Cockcroft. 1968 30p. h.b. 65p.
A survey of the project, written for parents.
Mathematical Forum 45p.
An anthology of the Bulletin of the Nuffield Mathematics Teaching Project edited by D.E. Mansfield.
Three handbooks by Mrs. E.M. Williams produced by CEDO for teachers in developing countries:

Mathematics: the first 3 years	1970	£1.00p.
Mathematics: the later primary years *	1971	£1.00p.
Mathematics: from Primary to Secondary *	1971	£1.00p.

ASSESSMENT
See 'Nuffield Mathematics: Development of Individual Assessment Tests'.

TRAINING AND DIFFUSION
Almost every LEA in the country now has a local organiser, and there are also some 200 teachers' centres where teachers meet to discuss, modify, amplify, and adapt the Nuffield materials. Regional courses and conferences are organised, and teachers wishing to become involved in the scheme should contact their LEA or the project.

EVALUATION
The Schools Council has recently granted £6,750 for an 18 month study to identify and describe the major approaches which appear to exist in the teaching of mathematics in primary schools. (q.v.)

RELEVANT PUBLICATIONS AND FILMS
Schools Council *Progress in primary mathematics,* (Field Report 4) 1967. Free from the Schools Council.
I do, and I understand, 15 minute black and white 16 mm film, showing a mathematics lesson in a primary school.
Into Secondary School, 20 minute black and white 16 mm film, showing work in the first year of the secondary school.
Copies of each of these may be obtained on free hire from the Petroleum Films Bureau, 4, Brook Street, London, W.1. or bought from Sound Services; *I do, and I understand* £15. *Into Secondary School* £19.

Maths with Everything 20 minute 16 mm film showing maths in the infant school. This can be hired from Concord Films Council Ltd., Nacton, Ipswich 1P10 0JZ for £1.40p. black and white, £2.40 colour, or bought from Graphic Films Ltd., 1 Soho Square, London, W.1. for £28.50 black and white, £90 colour.

Children and Mathematics. Five 30 minute television programmes, designed to help teachers in infant, junior and the early years of secondary school. Individual titles are 'We still need arithmetic', 'Common sense and new maths', 'Freedom to think', 'Checking up', 'Teachers at the Centre'. They may be bought at approximately £50 each from B.B.C. Television Enterprises, Villiers House, Haven Green, London W5 2PA, or hired from National Audio Visual Aids Library, Paxton Place, Gipsy Road, S.E.27 at £1.50 each (postage 28p).

FURTHER INFORMATION
Copies of all published material and of the film *I do, and I understand* are available for reference only by arrangement with Mrs. Gillian Box, Schools Council Information Centre, 160, Great Portland Street, London, W1N 6LL.

Further information is available from Miss Anthea Roberts at the project.

NUFFIELD MATHEMATICS: DEVELOPMENT OF INDIVIDUAL ASSESSMENT TESTS

DIRECTOR: Dr. L. Pauli

LOCATION: Institut des Sciences de l'Education, Palais Wilson, Geneva, Switzerland

DURATION: 1966–1970 **AGE RANGE:** 5–13 **GRANT** £11,500

AREA OF ENQUIRY

The project was initiated at the suggestion of the Institut des Sciences de l'Education following visits to a number of schools testing materials produced by the Nuffield Mathematics project (q.v.) by a research worker from the Institut. It was felt that the learning methods which the project aimed to encourage and the concepts it hoped to instil were based upon the fundamental work originally carried out by Jean Piaget, Director of the Institut, and as the Institut was already famous for its work on concept formation in mathematics with primary-age children, it offered to pace its expertise at the disposal of the project.

Thus the Institut undertook to develop a series of 'check-ups' on concept attainment in mathematics which teachers using the Nuffield mathematics guides could use to confirm progress made by individual children.

PROCEDURE

All the 'check-ups' have been developed in association with teachers using the material, and all have been tested and revised in the same way as the teachers' guides. The first set, largely complementary to *Mathematics Begins I* has been published as *Checking Up I*, and deals with concepts leading to the ideal of number and from this to 'operations' on numbers (addition, etc.) The check-ups are not 'intelligence tests'. They are more in the nature of milestones that will allow the teacher to judge just where the child is in his normal development in order to put him in an appropriate play situation, or to give him the right practice. The aim of 'check-ups' is to try to show that childre acquire concepts gradually, and to point to the difficulties that they are likely to encounter during their progress.

Further tests will be available in due course.

RELEVANT PAPERS AND PUBLICATIONS

Checking Up I Chambers & Murray, 1970, 50p

All the Nuffield Mathematics guides listed on the sheet on the project.

J. Piaget, *The Child's Conception of Number*, Tr. Gattengo and Hodgson, International Library of Psychology, Routledge & Kegan Paul.

J. Piaget, *The Psychology of Intelligence,* Tr. Piercy and Berlyne, International Library of Psychology, Routledge & Kegan Paul.

FURTHER INFORMATION is available from Miss Anthea Roberts, Nuffield Mathematics Project, Nuffield Foundation, Regent's Park, London, N.W.1., or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London, W1N 6LL.

APRIL 1971

MIDLAND MATHEMATICS EXPERIMENT

DIRECTOR: **Mr. C. Hope,** Worcester College of Education, Henwick Grove, Worcester.
Telephone: Worcester (0905) 25131

SECRETARY: **Mr. R.H. Collins**, Harold Malley Grammar School, Solihull, Warwicks.
Telephone: Birmingham (021) 705 6309

DURATION: 1968–1971 **AGE RANGE:** 11–18 **GRANT:** £24,000

AREA OF ENQUIRY

The Midland Mathematics Experiment was initiated in December 1961 with the construction of an experimental draft scheme for a newly opened grammar school. A number of Midland schools decided to adopt this scheme as a basis for a new O-level syllabus, and by 1966 some 6,000 children were involved in the testing of text material.

The MME is concerned to construct a new syllabus which:

1. takes notice of contemporary mathematics
2. includes contemporary uses of mathematics in industry, science etc.
3. puts mathematics into a setting which pupils recognise as within their experience of the twentieth century
4. is taught in the light of educational developments of the past thirty years paying due attention to providing background experience, aiming at insight into structure and encouraging pupils to recognise patterns into which mathematical ideas fall

In 1967 the MME approached the Schools Council for a grant to enable the project to employ three full-time teachers for three years, one with responsibility for CSE and non-examination pupils, one for O-level and one for A-level. The grant was approved and the teachers were appointed:

1. To collect and prepare course materials
2. To examine, collate and investigate in schools, the teacher's reports on the teaching methods, schemes of work, and suitability to different sets of children
3. To visit schools to evaluate the success or claims associated with a particular part of the scheme, to try out ideas for teaching and presentation
4. To spend some time in particular schools helping the mathematics department to achieve the spirit of MME schemes, by helping teachers to become familiar with the new topics of the syllabus and to demonstrate effective ways of teaching them

PROCEDURE

Members of the project have been concerned with the writing of CSE, GCE O-level and A-level syllabuses, the testing of these in schools, and the publication of revised texts for more general use.

MATERIALS

All CSE and O-level materials are published by George Harrap & Co., 182 High Holborn, London W.C.1

CSE			
Volume IA	1969	£1.15	These two volumes cover the first two years (11–13) of a CSE or GCE course
Volume IB	1970	£1.15	
Teachers' Answers & Notes IA & B	1969	£2.00	
Volume IIA (CSE)	1970	£1.20	Third year CSE course
Volume IIB (CSE)	1971	£1.25	Fourth year CSE course
Volume IIC (CSE)	1971	£1.25	Fifth year CSE course
GCE O-level			
Volume IA	See CSE		
Volume IB			
Volume IIA (GCE)	1970	£1.40	Third year GCE course
Volume IIB (GCE)	1971	£1.40	Fourth year GCE course
Volume IIC (GCE)	1971	£1.50	Fifth year GCE course
Source Book of Examples (Years 1,2,3)	1971		
Excursions from Mathematics (Parts A & B)	1968	£1.00	
Excursions from Mathematics Part A	1968	65p.	
Excursions from Mathematics Part B	1968	65p.	

GCE A-level

These texts are available in draft form only, from the MME Secretary:

Numerical Analysis	1969	45p.
Boolean Algebra	1969	25p.
Sets, Mappings & Relations	1969	40p.
Groups, Rings & Fields	1970	50p.
Mechanics 1	1970	50p.

The following are in preparation: Matrices, Vector Geometry, Vector Spaces, Analysis, Probability and statistics, Mechanics II. Probability and Statistics, Mechanics II.

Miscellaneous Materials available from the MME Secretary:

Charts

Chart No. 1 (Fraction)	1966	65p + 10p postage per 100
Chart No. 2 (Navigation)	1966	65p + 10p postage per 100
Chart No. 3 (Triangle Lattice)	1966	65p + 10p postage per 100
Chart No. 4 (Vector Diagram)	1966	65p + 10p postage per 100
Chart No. 5 (Patterns on a circle)	1966	65p + 10p postage per 100
Chart No. 6 (Area)	1966	65p + 10p postage per 100

Logic Circuit Kits

Pupils' Logic Circuit Boards	1970	£2.75
Mains Power Supply for 15 Pupils' Circuit Boards	1970	

Punched Cards

Trial Pack (T) of 100 cards	1970	65p. (+ 10p for postage)
Trial pack (H) of 50 cards		
3 transparencies & duplicated notes	1970	80p. (+ 10p. for postage)

TRAINING AND DIFFUSION

Each year, in the Summer Vacation, MME organises a residential course at the City of Worcester College of Education. Participants can opt for lectures and working sessions at one of two levels – introductory or advanced – according to their previous knowledge and experience.

The 1971 course runs from 19th to 27th August. Full details and application forms are obtainable from The Secretary, MME, Harold Malley School, Solihull.

Other courses and lectures are organised as requested by educational bodies or groups of interested teachers.

Schools making use of MME texts are invited to fill in an "MME Statistics" form (obtainable from the Harold Malley School, Solihull) and return to the Secretary. This enables them to be kept informed of all that is happening, and be given advice and help as required.

EXAMINATIONS

CSE. A revised syllabus, examined in 1970 by the West Midland Board, has been produced, together with specimen papers.

O-level. An O-level syllabus has been prepared in co-operation with the Joint Matriculation Board. The examination was taken by some 1774 candidates in summer 1970.

A-level. The lack of an MME Further Mathematics syllabus has meant that most participating schools have opted for the JMB Syllabus 'B'.

PUBLICATIONS – all available from the MME Secretary.

CSE Syllabus 1966	Revised 1970	Free
Specimen questions for Revised syllabus		Free

West Midlands CSE (Mode 2) June 1967, Papers I and II 15p
West Midlands CSE (Mode 2) June 1968, Papers I and II 15p.
Single sets of papers for West Midlands CSE, available from the Board.

O-level syllabus	1966	Free
JMB O -level Papers 1 & 2	June 1967	10p per set
Single sets of papers for JMB O -level available from the Board.		
A -level syllabus	1966	Free
Single sets of JMB A -level papers available from the Board.		
Set of O-level papers 1967–69		22½p

RELEVANT PAPERS AND PUBLICATIONS

Report	1962/3.	Harraps, 1964	out of print
Report	1963/4/5	Harraps, 1967	£1.50

Interim Report on the Application of Programme Learning Techniques to MME, 1968, Available from the project.

MME Programme Learning Report 1968/9, 1969, 20p (including postage). Available from the project.

Report 1968–70, 1970. Available from the project.

MME Magazine, No. 1, October 1970, No. 2, Spring 1971. A forum of ideas for participating teachers. Available free from the project.

FURTHER INFORMATION from Mr. R.H. Collins, Harold Malley Grammar School, Solihull, or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, W1N 6LL

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MATHEMATICS FOR THE MAJORITY

DIRECTOR: **Mr. P. Floyd**

LOCATION: Institute of Education, University of Exeter, Gandy Street, Exeter EX4 3QL
Telephone Exeter (0392) – 58390

DURATION: **1967–1972** **AGE RANGE:** 13–16 **GRANT:** £83,000

AREA OF ENQUIRY

The project, part of the Schools Council's programme for the raising of the school leaving age, was commissioned as the result of a study of mathematics in secondary schools, undertaken by Mr. Floyd in 1965/66.

This showed that the mathematical education provided for pupils of average and below average ability was very patchy, and a report was subsequently published as Schools Council Working Paper 14: *Mathematics for the Majority.* Evidence provided in the Newsom Report, *Half our Future,* also pointed to the poor standards of mathematical education of a vast number of early-leaving pupils.

The aim of the project is to produce a series of teachers' guides which will lead teachers into reassessing their work in mathematics with pupils between 13 and 16 years of age of average and below average ability, and which will provide source materials and ideas from which these teachers can make up their own courses.

As far as the pupils are concerned, the project aims:

1. to provide pupils with experience of mathematical situations to encourage powers of judgement and imagination
2. to remove barriers isolating mathematics from other areas of the curriculum and other interests of the pupils
3. to give pupils some understanding of mathematical concepts which underlie the numeracy required for every day affairs
4. to enable pupils to appreciate in some measure the order and pattern of their environment

PROCEDURE

The project team has been concerned with the preparation of a number of teachers' guides, which do not in themselves make up a course, but attempt to provide material from which teachers can develop courses for the less able pupils, more extensive material for brighter young school leavers, and further material to provide non-specialist teachers with background mathematical knowledge.

It is suggested that formal class teaching should be minimal, and that pupils should learn mathematics through practical and individual work. This has obvious implications for the school, both in the amount and type of space needed, and in the teaching situation, where the role of the teacher changes from that of a purveyor of information to that of an adviser/tutor. In addition, the guides have been prepared with the non-specialist mathematician in mind, and in a team-teaching situation much of the presentation and discussion can be conducted by such non-specialists.

All guides have been tested in 27 pre-pilot schools before an initial revision and distribution to 87 pilot schools from 23 LEAs, and 378 associated schools from 80 LEAs. Teachers from the pilot schools provided the project with feedback on the guides, which were then further revised before final publication.

MATERIALS

The following is a list of the guides with publication dates:

	*Provisional dates
Mathematical Experience	November 1970
Machines, Mechanisms and Mathematics	November 1970
Assignment Systems	November 1970
Number Appreciation	September 1971 *
Mathematical Pattern	September 1971 *
Mathematics from Outdoors	September 1971 *
Luck and Judgement	September 1971 *
From Counting to Calculating	March 1972 *
Algebra of a Sort	March 1972 *
Space Travel	May 1972 *
Some Simple Functions	May 1972 *
Shapes II	May 1972 *
Crossing Subject Boundaries	May 1972 *
Routes through Guides	May 1972 *

PUBLISHED MATERIALS

The first three guides have been published by Chatto and Windus Ltd., 42, William IV Street, London W.C.2, from whom they are available.

Mathematical Experience 43p
This book discusses the aims of the project and includes contributions from teachers who are actively concerned with teaching mathematics at this standard.

Machines, Mechanisms and Mathematics 60p
This is a survey of many forms of simple mechanisms which are not in everyday life, with discussion of the mathematical principles underlying them.

Assignment Systems 30p
Assignment systems can play an important part in mathematics teaching at this level, and this book discusses methods of preparing them, giving many examples.

EXAMINATIONS AND ASSESSMENT

Some trial schools have been working towards a CSE Mode 3 examination with an upper limit of a Grade 4 pass, but the guides are not principally intended to form part of a CSE course.

EVALUATION **Evaluator: Mr. P. Kaner**

The evaluation officer has been working in four main areas:

1. Evaluation activities intended to clarify and enlarge on the objectives of the project. This includes a) identifying different aspects of the curriculum problem which the project is trying to tackle; b) clarifying the objectives of teaching mathematics to the average and below average pupils; c) finding out as much as possible about the educational attainments of the pupils concerned, and examining other related factors

2. Evaluation activities intended to facilitate the editing of trial versions of the guides

3. Evaluation activities designed to measure the impact on the pupils involved, both as regards the project's declared objectives and also in relation to other aspects of pupil behaviour

4. Evaluation activities designed to lead to the publication of a descriptive report on the project and its impact on the educational scene.

TRAINING AND DIFFUSION

So many LEAs have been involved with the project's work at trial stage that there is already a large network of area liaison officers, whose responsibility local training courses will be. The project is also considering the production of an 'ideas and resources' package as a workshop aid to such training courses.

Teachers wishing for information on the availability of courses, should contact their LEA.

RELEVANT PAPERS AND PUBLICATIONS

Schools Council *Raising the School Leaving Age,* (Working Paper 2) HMSO 1965 17½p.
Schools Council *Mathematics for the Majority,* (Working Paper 14)) HMSO 1967 25p.
Schools Council *Choosing a Curriculum for the Young School Leaver*, (Working Paper 33) Evans/Methuen Educational, 1971 26p.
'Mathematics for the Majority', *Dialogue* 3, June 1969.
News Sheet. 4 issues to date, circulated by the project to participating schools.
P.J. Floyd, 'Mathematics for the less able', Proceedings of the Commonwealth Mathematics Conference, Trinidad, 1968. (Commonwealth Secretariat).
P.J. Floyd, 'New paths in school maths', *Higher Education Journal,* N.U.T., Summer 1968.
P.J. Floyd, 'Not good enough for Heaven, nor bad enough for Hell', *Times Educational Supplement,* 30th October, 1970.

FURTHER INFORMATION

All published and draft materials, and all items listed above, are available for reference only in the Schools Council Information Centre. Further information is available from the project or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

N.B. A continuation project, concerned with the development of pupils' materials for use with the teachers' guides, will be directed by Mr. Peter Kaner at the University of Exeter Institute of Education from 1971–1974 at a total cost of £69,000. It is hoped that multi-media kits of materials will be produced by 36 groups of teachers in association with the project team. For further details see Mathematics for the Majority - Continuation Project

MATHEMATICS FOR THE MAJORITY – CONTINUATION PROJECT

DIRECTOR: **Mr. P. Kaner**

LOCATION: Institute of Education, University of Exeter, Gandy Street, Exeter EX4 3QL
Telephone: Exeter (0392) 58390

DURATION: 1971–1974 **AGE RANGE:** 13–16 **GRANT:** £69,000

AREA OF ENQUIRY

Experience in the trial and associated schools using the teachers' guides prepared by the Mathematics for the Majority project (q.v.) revealed the need for pupil material if schools were to be able to develop courses to harvest the full potential of the ideas and suggestions contained in the guides. This further project was therefore set up to:

1. develop pupil assignments and study guides related to the Mathematics for the Majority teachers' guides, other published texts, and new packs of source materials including film loops, audio-tapes and pictorial material developed simultaneously by the project team

2. maintain contact with the network of associated schools already built up by the Mathematics for the Majority project by testing different parts of the new materials in different groups of the schools, and by inviting local groups of teachers to contribute to the development of the new materials, especially the individual assignments

3. produce one further teachers' guide to the new pupil material.

PROCEDURE

Local authorities wishing to participate are forming teachers into writing groups. Each writing group will work for one term producing a complete pupil material package on some environmental aspect of mathematics. This material, in draft form, will be sent to the project for production in more polished form and then distributed to other areas for testing. The tested packages, plus comments and amendments, will be returned to the project and prepared for publication. The project aims to involve the maximum possible number of teachers in this writing programme to produce materials that will be effective when used by inexperienced and non-specialist teachers.

The writing group will be supported by project co-ordinators who will normally be local curriculum development leaders seconded to the project on a part-time basis. This is to ensure that participating schools are regularly visited and supported by a project representative.

Writing and testing should happen simultaneously in the first place. Writing groups will then test packages from other areas for three terms following their own writing activities.

FURTHER INFORMATION from the project director or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

APRIL 1971

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SIXTH FORM MATHEMATICS CURRICULUM PROJECT

DIRECTOR: Mr. C.P. Ormell

LOCATION: School of Education, University of Reading, Reading, Berkshire. **Telephone:** Reading (0734) 85234

DURATION: 1969–1975 **AGE RANGE:** 16–18 **GRANT:** £85,000

AREA OF ENQUIRY

the project was initially established to:

1. review the content of sixth form mathematics
2. investigate the connection between mathematics and physics
3. investigate the mathematical needs of pupils taking other subjects such as biology and economics
4. investigate the mathematics that can profitably be taught as part of the general education of sixth form pupils

A preliminary analysis of the eight 'new maths' A-level syllabuses and the many 'traditional' syllabuses led the project to some fundamental questions about the aims, objectives and priorities of sixth form mathematics syllabuses and the resulting need for a new approach based on new materials. The Schools Council therefore granted an extension to 1975 to enable the project to develop and evaluate materials appropriate to mathematical specialists, scientists, and the general education of sixth form pupils.

PROCEDURE

The main preliminary postulate of the project is that progress lies neither in more 'structural' content, nor in a return to the traditional syllabus, but in a syllabus much more closely related than previously to the possibilities of a range of real situations. Preliminary syllabus analysis led the project to conclude that most 'modern' and 'traditional' mathematics syllabuses rely heavily on 'vertical relevance', that is the building up of elaborate structures which are justified mainly on the ground that they will make sense when the student is at a more advanced stage. In contrast to this, the project's work is based on 'horizontal relevance'. An analysis of this has led to the further concept of 'hypothetical relevance', which consists of the mathematical discussion of hypothetical real-life situations, and poses problems about the consequences and implications in ordinary terms of changes and developments in these situations. The full usefulness of mathematics is brought out by relating mathematical methods to the possibilities of concrete situations.

In a recent paper the project has outlined five main conditions which ought to be met by a good sixth form mathematics curriculum:

1. It should imply a course of work which will consolidate manipulative facility and lead the student to the point where he or she is free to think mathematically
2. It should sustain and consolidate mathematical sensibility in the student's mind. Not only must convincing proofs be given, but they must be seen to be transparent, natural and convincing
3. It should point in the direction of further pure and user mathematics
4. It should be self-evidently interesting, relevant and rewarding from the student's point of view
5. The curriculum should not be overloaded.

MATERIALS

The main output of the project will be a critique of the syllabus problem in depth, to the point where it implies particular syllabus content and construction methodology, and the application of this to produce actual syllabuses tuned to special needs, particularly those of the future mathematician, physicist, biologist, economist, social scientist, arts undergraduate. In addition, however, packages of material are being developed which can be used to approach particular topics in an A-level syllabus; these will not constitute a complete course, but will be capable of being used in conjunction with existing mathematical syllabuses at A-level.

Three 'packages' of material were produced during the pilot phase – *Indices, Quadratic Models* and *Limits.* Thirteen new packages are at present under preparation. A mathematical topic is presented in each of these packages as a possibility-grappling instrument. Each package contains:

A main pupil text.
Tables or charts, where relevant.
A harder problem supplement.
A teacher's guide.
A pupil's 'Background and Answers' book.

Each package involves 2–3 weeks work.

These materials are being tested in a number of trial schools and the teachers concerned are being asked to complete questionnaires to assist the project's testing of 'hypothetical relevance'. It should be stressed that the project is not simply developing material, but rather a material-approach 'package deal'; its chief concern is in developing a new attitude to mathematics – one which relates mathematics strongly to the imaginative possibilities of situations.

EXAMINATIONS

The project is hoping to design and establish a new kind of sixth-form exam, to be called Applicable Mathematics.

EVALUATION

The evaluation aims to find out how 'hypothetical relevance' material affects the student's interest in, assimilation of, and sense of purpose with a given kind of mathematical technique.

RELEVANT PAPERS AND PUBLICATIONS

C.P. Ormell, 'Idealogy and the reform of school mathematics', *Proceedings of Philosophy of Education Society of Great Britain,* Vol. III 1969.

Paper 1/69	*Introducing the Project.*
Paper 2/69	*Outline Programme of the Project.*
Paper 3/69	*Opportunities for Individual Teachers and Schools to take part.*
Paper 4/71	*Materials for Trials, Phase 2.*
Newsletters	Produced twice yearly 1, 2 and 3 to date. 27p for issues 2 to 5.
MP 1/69	*The Mathematics for Physics Iproblem.*
MP 2/69	*The Mathematics needed in Sixth Form Physics*
MP 3/70	*The Crux of the Maths-Physics Problem.*
MP 4/70	*What can be done about Mathematics for Physics in the Sixth Form?*
DP 4/70	*Mathematics, Science of Possibility.*

All these are available from the project.

FURTHER INFORMATION from the project director or from Mrs. Gillian Box Schools Council's Information Centre, 160 Great Portland Street, W1N 6LL.

CONTINUING MATHEMATICS

DIRECTOR: **Mr. A.W. Fuller, H.M.I.**

LOCATION: Centre for Educational Technology, University of Sussex, Falmer, Brighton, Sussex.
Telephone: Brighton (0273) 66755

DURATION: 1971–1974 **AGE RANGE:** 16–18 **GRANT:** £75,000 (+ £109,000 from NCET, DES, SED and Industry)

AREA OF ENQUIRY

Continuing Mathematics, published by the National Council for Educational Technology in 1969, put forward a recommendation for a project aimed at developing a systematic, and largely self-instructional, course of learning materials for those sixth-formers who need mathematics as an ancillary subject, but who would not normally prepare for examination in this subject at A-level.

The Schools Council has agreed to contribute to the overall cost of the project, which will seek to demonstrate the potentialities of a systems approach, and to create a teaching system that meets a real demand, draws its examples from real-life problems and fully exploits the applications of educational technology.

PROCEDURE

The project will prepare some 200 hours of course materials, sufficient for a nominal two-year course. Teachers material will also be prepared, with the non-qualified mathematician in mind. The learning materials will be made available in modular form, each module comprising several kits of programmes and diagnostic tests which will use a range of audio-visual resources as appropriate. Packages will allow for a range of abilities and interests, and topics within modules will range around general subject areas, such as statistics, calculus, data processing, matrices and decision making.

RELEVANT PUBLICATIONS

A.G. Howson and M.R. Eraut *Continuing Mathematics,* Working Paper 2, National Council for Educational Technology, 1969 42½p.

FURTHER INFORMATION is available from Mr. Fuller (from August 1971) or Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL

APRIL 1971

SCIENCE 5–13

DIRECTOR: Mr. L.F. Ennever **DEPUTY DIRECTOR:** Mr. A. James

LOCATION: School of Education, University of Bristol, 9 Tyndall Avenue, Bristol BS8 1TQ.
Telephone: Bristol (0272) 24161 Ext. 738.

DURATION: 1967 - 1972 **AGE RANGE:** 5–13 **GRANT:** £112,100 (+ £18,000 from Nuffield Foundation + £9,740 from Scottish Education Department)

AREA OF ENQUIRY

The project was established to consolidate and extend the work on primary science teaching initiated by the Nuffield Junior Science project, paying particular attention to the needs of older junior pupils, and pupils in the early years of secondary school. The main aim of the project is seen as the identification and development of topics or areas of science related to a framework of concepts appropriate to the age of the pupils. The aim of the development work is to assist teachers to help children, through discovery methods, to gain experience and understanding of the environment and to develop their powers of thinking effectively about it.

The project was also asked to take account of the needs of children with varied abilities and environments, to study how to increase primary school teachers' knowledge of science, to advise colleges of education on the science content of curriculum courses and to maintain close liaison with other related projects.

PROCEDURE

The project's development of materials is based upon an analysis of mental development, and a statement of objectives for children learning science. The description of mental development was broken down into three stages: Stages 1 and 2 are those in which children develop mental operations through the exploration of concrete objects and materials, Stage 2 being indicated by a greater facility in handling variables and quantitative values. Stage 3 is marked by a developing ability to think in the abstract - children can begin to deal with *possible* situations: their thought is not tied to concrete things or the immediate reality but can deal with what might be.

Behavioural objectives for children learning science, related to these three stages, are dealt with in greater depth in *With Objectives in Mind,* but the principal aim upon which these are based can be summarised as 'developing an enquiring mind and a scientific approach to problems'. This is broken down into: developing basic concepts and logical thinking; posing questions and devising experiments or investigations to answer them; acquiring knowledge and learning skills; communicating; interpreting findings critically; appreciating patterns relationships; developing interests, attitudes and aesthetic awareness; observing, exploring and ordering observations.

Basing their work on the conviction that teachers should be responsible for thinking out and putting into practice the work of their own classes, and that children tend to work best when trying to find answers to problems they have themselves chosen to investigate, the project team have produced a series of 'units', or teachers books, which are studies of particular subject areas. These are not intended to cover the whole range of possible topics and it is hoped the groups of teachers will develop their own 'units' along the same lines. The units, details of which are given below, are not intended to form a syllabus, or a course. The apparatus described in them is generally of a simple kind.

The implementation of the project will obviously vary from school to school, but in that much of the work is individual or group work, the working area will need to be flexible, and there will need to be easy access to materials, tools, water etc. Children will need to be able to proceed at their own pace. Teachers will need to be sufficiently knowledgeable to see the inherent science in the situations they study with the children and the project team would suggest that in the later stages of the age-range there is need in schools for a teacher more especially trained in science, not in order to teach it as a separate subject, but to act as a consultant to his colleagues.

As open a time table as possible is envisaged; the branches of science are not seen as separated and ample provision is made for integrating science with other subjects.

MATERIALS

All the units have been written in association with teachers and tested in over 300 trial classes spread throughout the country. A large number of associate schools have also used the materials, but are not part of the evaluation scheme.

The units will be published by Macdonald Educational, 49 Poland Street, London W.1. and the first set should be available in Spring 1972.

First Set (Spring 1972)	1. *With Objectives in Mind*	
	2. *Working with Wood*	Stages 1 and 2
	3. *Working with Wood*	Background book
	4. *Trees*	Stages 1 and 2
	5. *Metals*	Stages 1 and 2
	6. *Metals*	Background book
	7. *Time*	Stages 1 and 2 and background book

Second Set (Spring 1972)	8. *Early Experiences*	Infant stage
	9. *Science from Toys*	Stages 1 and 2
	10. *Structures and Forces*	Stages 1 and 2
Third Set (late 1972)	11. *Structures and Forces*	Stage 3
	12. *Change*	Stages 1 and 2
	13. *Change*	Stage 3
	14. *Minibeasts*	Stages 1 and 2
	15. *Holes, Gaps and cavities*	Stages 1 and 2
	16. *Coloured Things*	Stages 1 and 2

Using the Environment, a background book for teachers, by Dr. Margaret Collis, an inspector of the Kent LEA, will also be published, but the date is not yet settled.

EVALUATION

Evaluator: Mrs. Wynne Harlen

Evaluation has been concerned with discovering how effective the units were in helping teachers and enabling children to achieve some of the objectives. The children were tested at the beginning and end of the total work using test items presented by means of 8 mm. film sequences; the same tests were also given to an equal number of control classes. Teachers' opinions of the total units were also gathered by questionnaires, and details of the learning environment and other relevant factors were obtained by visiting the trial classes. All this information was used to revise the units before final publication.

COLLEGES OF EDUCATION

The Council has recently granted the project further funds to enable it to prepare familiarisation materials for use in teachers' centres and colleges of education.

This will consist of a pack of information and work cards, photographs, tapes and film loops which should help to provide staff and students with basic information about the project, and suggest further activities for students.

This kit should also prove valuable for in-service workshops at teachers centres.

TRAINING AND DIFFUSION

A number of national courses have been run for teachers and colleges of education interested in the work of the project. A network of local co-ordinators has been established, but it is perfectly possible to use the materials with no formal training.

RELEVANT PAPERS AND PUBLICATIONS

L.F. Ennever, 'Helping children to learn science', *Dialogue 1,* September, 1968
L.F. Ennever, 'Science 5/13', *Education and Science,* No.33, June 1969.
L.F. Ennever, 'The new science', in *Teaching in the British Primary School,* ed. by Vincent Rogers, Collier-Macmillan, 1970.
'Early Experiences Science 5/13', *Dialogue* 6, August 1970.
Newsletter 1, June 1969. Out of print
Newsletter 2, Spring 1971, free from the project.
All materials of the Nuffield Junior Science Project.

FURTHER INFORMATION

All items listed above, and all Science 5–13 trial materials, are available for reference only in the Schools Council Information Centre. Further information is available from the project director, or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

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CHILDREN EXPLORE THEIR ENVIRONMENT: THREE FILMS

DIRECTOR: Mr. J. Howard

LOCATION: Bishop Grosseteste College, Lincoln. **Telephone:** Lincoln (0522) 27347

DURATION: 1969–1971 **AGE RANGE:** 5–13 **GRANT:** £3,000

These three short films show how children in primary schools learn through the exploration of their environment and how they react when confronted with new problems and learning situations. Work on the films began when Mr. Howard was seconded to the Nuffield Junior Science Project; they have subsequently been completed and should be available later in 1971.

Children Observed (15 minutes. Colour. 16 mm.)
This shows children aged between five and nine in a number of potential learning situations/activities, both as individuals and in groups. Some of these are extremely free and in others the teacher has done little more than provide the materials and equipment. In no case is there strong teacher direction.

The main purpose of the film is for teacher-training, but it might also be of interest to parents. It presents samples of children's behaviour in physical activities, reactions to stimuli, imaginative and creative achievement and social interaction. It is intended that the film should be used to teach students how to observe children and that the students should analyse the role of the teacher in the film and suggest how the learning could be developed.

The film has two commentaries: one by Miss Molly Brearly and one by Professor Eric Lunzer.

The Explorers (15–20 minutes. Colour. 16 mm.)
This film shows two comparative case-histories on science topics in a Darlington school. The experiments and investigations of the group of seven-year-olds started from a visit to a farm, and those of a group of ten-year-olds from questions about air. In each case the children chose to pursue certain questions in pairs, small groups or as individuals. The film explores the facets which they tackled and shows how they devised and carried out the appropriate experiments.

The emphasis in this film is on science activities for children of these ages and the importance of the children's own planning and reasoning. Neither teacher is seen in the film, although there is a great deal of evidence of the demanding yet subtle role each had had to fulfil. Much of the soundtrack is of children's questions and discussion.

This film is also intended for teacher-training.

From Small Beginnings (20–25 minutes. Black and white. 16 mm.)
This film shows how an environmental project can be developed in a most unpromising situation. The location is a large, uniform, urban estate. The class is a group of mixed-ability children of seven plus, and the teacher is a non-scientist. The project is developed from a visit to a nearby street and, although originally science-based, it came to involve art, English, maths and history. There is no commentary, simply a musical score.

This film is again intended for initial and in-service teacher training, and may also be interesting to parents and social workers.

FURTHER INFORMATION
Details of availability and cost will be announced shortly. Enquiries to Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

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THE FORMATION OF SCIENTIFIC CONCEPTS

DIRECTOR: **Dr. J. Rogers** **CO-ORDINATOR:** **Mr. E. Rothwell Hughes**

LOCATION: University College of North Wales, Bangor. **Telephone:** Bangor (0248) 2501

DURATION: 1968–72 **AGE RANGE:** 7–12 **GRANT:** £19,300

AREA OF ENQUIRY

Following the exploration of new approaches to the teaching of science and mathematics, and the work of such projects as Nuffield Junior Mathematics (q.v.), Nuffield Junior Science, Science 5–13 (q.v.) and Environmental Studies 5–13 (q.v.), this research project was established:

1. to construct and carry out tests that enable the research team to study the development of scientific and mathematical concepts in children between the ages of seven and twelve

2. to attempt to relate this development to
    a) maturation of the pupil
    b) ability (I.Q. of pupil)
    c) social background – home and school environment.

It was intended that these tests should be available for use by teachers as measures of development.

PROCEDURE

The research team has been working in close association with groups of teachers in Wales and has tested the resulting material with a carefully selected sample of children. Their programme has included:

1. The construction of concrete test material that can readily be handled by children

2. The grading of the different test items in a sequence that provides a measure of concept development

3. The construction of a standard form of questioning procedure

4. The construction of recording sheets which will enable project members, and eventually teachers, to analyse the responses of the children.

This material will be further tested with teachers not already involved in the project, another report will be written on the use of the material by teachers for diagnostic testing purposes, and recommendations will be made on the application of the material in the classroom.

FINAL PUBLICATION

The project team is currently preparing a research report for submission to the Schools Council, in addition to the test material outlined above.

FURTHER INFORMATION is available from the project, or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London, W1N 6LL.

APRIL 1971

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NUFFIELD COMBINED SCIENCE

DIRECTOR: Mr. M.J. Elwell

LOCATION: City of Birmingham College of Education, Westbourne Road, Birmingham 15.
Telephone: Birmingham (021)–454 5106

DURATION: 1965–1969 **AGE RANGE:** 11–13 **GRANT:** Nuffield only

AREA OF ENQUIRY

Combined science is a method of introducing children to natural phenomena and to ways in which the children themselves can interpret these phenomena. It is an attempt to recapture the unity of outlook and consistency of method which belongs to the whole of science.

Combined Science is intended for children of about 11 to 13 and is adaptable for use with the whole range of ability. It can be used to lead into O-level courses in physics, chemistry and physics, whether Nuffield or non-Nuffield; Schools Council Integrated Science (q.v.) or other integrated science projects; Nuffield Secondary Science (q.v.) or any CSE or project work. It is envisaged that five 40 minute periods a week should be allocated to the work.

The materials are designed so that children have the opportunity of working in different ways in class, demonstration and circus investigations. Full opportunity has been taken to use children's first hand experience as a starter to the work outside the laboratory. The general aim has been to produce a source of ideas, materials and comment to allow teachers to devise their own courses, and the teacher's guide contains explicit procedures for carrying out experiments as well as teaching notes which, by suggesting definite examples, exemplify the philosophy underlying the project's work.

MATERIALS

All materials have been tested in some 30 schools, and revised in the light of comments from teachers and children. They are published by Penguin Education and the Longman Group, from whom inspection copies are available. Orders should be placed through normal suppliers.

Pupil Materials

There are 10 pupils' booklets entitled *Activities.* These booklets are not textbooks: they contain instructions (a) for some of the class experiments, (b) for all the 'circus' of experiments, as well as stimulating photographs, thought-provoking questions, starters for class discussion, and some background. The ten main subject areas covered are: The world around us; Looking for patterns; How living things begin; Air; Electricity; Water; Small things; Earth; Insects; Energy. There is sufficient material to help children working at different paces. There are in addition a number of reference sheets, telling children how to operate certain items of apparatus and giving instructions on some of the techniques that go with their use.

Activities Pack I (1–5) £1.45
Activities Pack II (6–10) £1.35

Teacher materials

Teachers Guides I and II contain a comprehensive set of instructions on how to set up all the experiments including a detailed list of requirements. Each experiment is preceded by an introduction which indicates how work can be developed and related to other topics. *Teachers Guide III* is a handbook with chapters giving advice on items of equipment, care of animals and plants, and topics such as safety and note-taking. It also contains lists of apparatus and materials, recommended books and others teaching aids, addresses, instructions on how to make items of equipment cheaply and an appendix on teaching mathematics in relation to combined science.

Teachers' Guide I	£2.75
Teachers' Guide II	£2.50
Teachers' Guide III	£1.75

Class Material

18 colour film loops in Standard and Super 8, with a set of teaching notes, price £5.25 and £6.25 respectively

One black and one white loop price £3.75, £4.50.

African Clawed Toad – Injections and Pairing
Male Rat – Finding the Reproductive System
Female Rat – Finding the Reproductive System
A variety of Animals and Movements I
A variety of Animals and Movements II
Birth – Calf and Baby (black and white)
Growth of a Bean Shoot – Measurement
Contact Electricity in Industry
Detergency
Desalination
A Fish – Movement in slow motion *
A Frog – Movement in slow motion *
Buoyancy of Gases *
Fertilisation in the flowering plant *
Gases of the Air at Work *
Hydrogen *
Air in Motion *
Large Scale Forces *
Manufacture of Steel *

* available September 1971.

DIFFUSION AND TRAINING

In-service training courses are held at the City of Birmingham College of Education (residential 14 days duration) and at the Chelsea College Centre for Science Education (non-residential). Further details of these are available from the respective Registrars.

RELEVANT PUBLICATIONS

'Science: Nuffield and Schools Council', *Dialogue 4,* November 1969.

FURTHER INFORMATION

Is available from the project director.

Copies of all published materials are available for reference at the Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

N.B. The Nuffield Foundation has recently set up a one year investigation under the direction of Mr. C.D. Bingham and Mr. M.J. Elwell into the use of Combined Science in middle schools. The aim will be to produce a guide for all those concerned with science in middle schools. Further details from the Nuffield Combined Science Continuation Project, Chelsea College, Bridges Place, London, S.W.6.

PROJECT TECHNOLOGY

DIRECTOR: **Mr. G.B. Harrison**

LOCATION: Loughborough College of Education, Loughborough LE11 0BR. **Telephone** Loughborough (05093) 61558

DURATION: 1967–1972 **AGE RANGE:** 11–18 **GRANT:** £270,000

EVALUATOR: Mr. D.A. Tawney, Institute of Education, University of Keele. (1969–1971. £10,000)

AREA OF ENQUIRY

Project Technology was established as the result of a one-year pilot study undertaken by Mr. Geoffrey Harrison during 1966–67 on behalf of the Schools Council into the place of technology in the curriculum. This study was published as *Technology and the Schools,* Schools Council Working Paper 18, and recommended:

1. the need for development to ensure that the role of technology in society is given a proper place in the curriculum

2. the need for development to help schools give girls and boys experience of technological problem-solving situations of a practical kind

3. that the successful development of technological studies through project work will depend on the development of curricular courses in those fields which are conducive to technological work

Project Technology was established in 1967 to design, test and arrange publication of teaching materials for schools wishing to include in their curriculum work in and about technology, and to stimulate outside support of all kinds for the schools. The project is concerned:

1. to see that all children become aware of the technological forces which are working on them, and which they have at their disposal, and that they are aware of their ability and responsibility to control these forces

2. to see that as many children as possible, of all ages and abilities, have the opportunity to become involved in the technological design process

3. to help all children push forward the frontiers of their own technological resources in terms of theoretical knowledge and practical skills.

PROCEDURE

In addition to the preparation of teaching materials, details of which are given in the following section, the project has been building up an increasing network of schools and institutions of further and higher education. Some 30 regional groups and sub-groups have been established to provide local support for school activities, to spread the philosophy of the project, and to assist with the trial of teaching material. Details of these are given in *The Next Two Years.*

A Bulletin published by the project quarterly now has a circulation of over 8,000. The project also produces SATIS (Science and Technology Information Sources for Teachers) 5 times a year in association with Esso Petroleum Ltd. The project has worked closely with the Schools Science and Technology Committee since its inception in 1968.

A trial Surplus Buying Agency, buying government surplus materials, components and equipment for the use of schools, has been running for two years in Nottingham, with sub-depots in Bristol, Lincoln, Sheffield, Southampton, Stevenage and Stoke, and it is hoped to increase this service.'

MATERIALS

All teaching materials have been prepared as the result of an assessment of what was required in the schools, are being tested in a number of schools, and revised in the light of these trials. Materials can, roughly speaking, be divided into four categories:

1. **Teachers Guides** to help fill gaps in the teacher's knowledge and experience, help him or her initiate and supervise technological activities, and give guidance on the availability, use and construction of apparatus.

   These will be published by Heinemann Educational Books Ltd., 48 Charles Street, London, W.1. from early 1972. Provisional titles are as follows:

   The What, Why and How of Schools Technology
   Computer and Control Logic
   Simple Bridge Structures
   Introducing Fluidics
   The Ship and its Environment
   Simple Fluid Flow
   Industrial Archaeology for Schools
   Food Science and Technology (possible basis for CSE Mode 3 course)
   Home Technology (possible basis for CSE Mode 3 course)
   Design with Plastics
   Electrical and Electronic Construction Techniques for Schools
   Muffle Furnaces
   Simple Materials Testing Equipment

Practical Applications of Bernouilli's Theorem
Engine Test Beds
Mechanical Test Equipment

2. **Technology Briefs** aim to inspire and guide pupils in order to involve them personally and directly in the technological design process. The briefs therefore suggest fields of activity and identify some of the problems in these fields, but allow different interpretations. Each brief carries an indication of whether its principal purpose is Constructional, e.g. vacuum forming apparatus, or Investigational, e.g. aircraft noise. Many briefs are written with both purposes in mind.

   There will be approximately 100 briefs, to be published by Heinemann Educational Books Ltd. from early 1972.

3. **Course material** (a + b are discrete courses, while c - f provide course elements within, or supplementary to, conventional courses).

a. *Basic Electronics.* A two or three year course for middle school pupils of average ability, or to be used as a shorter more intensive course by older pupils, and even by teachers themselves.

English Universities Press Ltd., St. Pauls House, Warick Lane, London, EC4. 1972.

b. *Control Technology.* A two or three year CSE course providing pupils' programmed units and a teacher's guide.

English Universities Press 1973.

c. *Photocell Applications.* Pupils' and teachers' guide for use with average and above average ability pupils.

English Universities Press, 1972.

d. *Fibres in A-level Chemistry.* Pupils' booklet of background material and investigational briefs.

English Universities Press, 1973.

e. *Technology and Man.* To be published in 3 sections: *Communication, Environment* and *Energy.* Each title will consist of a large multi-media integrated studies pack and teacher's guides for use with pupils aged 9 – 14.

Blackie and Son Ltd., and University of London Press, 1973.

f. *History Units.* In 4 sections: *The Power of Steam, The Age of Iron and Steel, The Textile Revolution* and *The Making of Machines.* Each title will consist of a pupils' resource package and teachers' guide. For incorporation into O-level and CSE courses.

Edward Arnold Ltd., 41 Maddox Street, London, W.1., 1972 and 1973.

4. **Review Material.** Case studies and methods of operation which have helped schools in introducing and developing technological activities, and reprints from Project Technology Bulletins and other publications.

   School Science and Technology: 1 Applications of Science. Revised edition English Universities Press, 1970. 75p. Selected descriptions and case histories of applied science projects and investigations.

   School Science and Technology: Science Fairs, English Universities Press, 1970. 75p. Selected descriptions and case histories from BBC Science Fairs.

   School Technology, Vol. 1, English Universities Press, 1971. 60p. Edited reprints from 1968 issues of *Bulletin.*

   School Technology, Vol. 2, English Universities Press, 1971, 75p. Edited reprints from 1969 issues of *Bulletin.*

Examinations
The project has been working with examination boards to encourage the development of appropriate syllabus and assessment procedures.

Evaluation
The evaluation unit, based at Keele University since 1969, has so far produced internal reports on the Bulletin (renamed *School Technology* in January 1971), SATIS, teaching material on photocell applications and two of the early Teachers Guides.

Training and Diffusion
The projects work is being disseminated through its regional centres and the *Bulletin.* Additionally the project has recently appointed a Field Director whose special responsibility it is to promote the project's work in colleges and departments of education.

Future Developments in the School
The range of teaching material which will become available from early 1972 will help teachers become more confident and more competent to promote and develop technological project work of all kinds. This is likely to lead to a considerable reappraisal on the part of science and technical subject teachers, especially of the content and method of their courses. A similar reappraisal, if less drastic, is possible in the light of the teaching material for other parts of the curriculum.

These developments will no doubt lead more schools to consider the opportunities offered by CSE Mode 3 Examinations, with a growing emphasis on course work assessment, as well as varying degrees of subject integration.

The implications for the school, in terms of organisation, timetabling, staffing, cost of equipment and components, will vary enormously. In the case of course material such as Control Technology (Mode 3 CSE) the headmaster is faced with a number of major decisions involving finance, long term organisation, and timetabling. When this is the case a comprehensive statement on the course is being provided, together with all relevant information.

RELEVANT PAPERS AND PUBLICATIONS

'Mind-making or machine-making?', *Dialogue 1,* September 1968.
Schools Council, *Technology and the Schools,* (Working Paper 18), HMSO 1968. Out of print. An account of the feasibility stage of the project.
Occasional Paper 1: *Science and Technology for girls,* 1969. Out of print.
Occasional Paper 2: *Project Work in A level Physics* by L.J. Taylor. 1969. 25p. from the project.
Local Science and Technology Centres. 25p. from the project.
Young Technologist. 1970. 25p. from the project. An account of an experiment by boys at Gateway School, Leicester, which won the second European Philips Contest for Young Scientists and Inventors.
The Next Two Years, 1970. 25p. from the Schools Council. A project progress report.
Schools Council, *Support for School Science and Technology,* (Working Paper 38), Evans/Methuan Educational 1971.
School Technology, formerly *Bulletin.* Quarterly from the project. Annual subscription £1.50 (teachers and students £1.00).
SATIS, 5 times yearly + annual index. Annual subscription £1.75.

FURTHER INFORMATION

Items listed above, samples of trial material and such material as is published are available for reference only in the Schools Council Information Centre. Further information is available from the project or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

April 1971.

NUFFIELD SECONDARY SCIENCE

ORGANISER: **Mrs Hilda Misselbrook**

LOCATION: Centre for Science Education, Chelsea College of Science and Technology, Bridges Place, London S.W.6
Telephone: 01-736 3401

DURATION: 1965–1970 **AGE RANGE:** 13–16 **GRANT:** Main cost–Nuffield Foundation, Schools Council: £9,000 (for evaluation and C.S.E. Mode 3 work)

AREA OF ENQUIRY

This project is concerned with science for those pupils of 13–16 who are unlikely to take G.C.E. O-level in science, and is based upon the ideas expressed in Schools Council Working Paper 1 *Science for the Young School Leaver.* This suggested that the main criterion of the work in this field should be that the work had significance for the pupils, and this criterion has been maintained as the materials have been developed. Emphasis was also given in the Working Paper to the involvment of pupils through their own experimental investigations of problems which are real to them, and such investigations constitute a major part of the work.

Appraisal of data and evidence collected through the pupils' own investigations is seen to be an essential step to looking critically at the evidence collected by others. Discussion at a number of levels from a simple discussion by the pupils of their own experimental results to one in which they consider a social or moral problem which has arisen during a piece of work is an important element in the work.

For a number of reasons including the wide ability range of the pupils concerned, the differences in their interests and environments, and the variety of schools they attend, Nuffield Secondary Science is not designed as a course. It is material which is flexible and capable of adaptation so that from it teachers can select material from which to construct coherent courses which are relevant to their own pupils. The content is contained in the eight themes listed below which were suggested in Working Paper 1 as being fundamental for all pupils. The work ignores the traditional boundaries between science 'subjects' and areas are included which have not normally appeared in school science courses in the past.

TRIALS

Four months after the inception of the project a feasibility trial lasting about 7–8 weeks was held in 16 schools. Development trials 1967–68 were held in 53 schools and the number increased in the following year to 212. An additional 54 schools were involved in the third and final year trial, 1969–70.

MATERIALS

The following texts, which are for the teachers' use will be published by the Longman Group in May 1971:
The Teachers' Guide

This is an essential introduction to using the material.	£1.25
Theme 1 *The interdependence of living things*	£1.50
Theme 2 *Continuity of life*	£2.00
Theme 3 *Biology of man*	£2.00
Theme 4 *Harnessing energy*	£1.50
Theme 5 *Extension of sense perception*	£1.50
Theme 6 *Movement*	£1.50
Theme 7 *Using Materials*	£2.00
Theme 8 *The earth and its place in the universe*	£2.00

A set of eight Themes will cost £12.50

An Apparatus Guide will be published in Summer 1971.

Background readers for pupils on a number of topics are being prepared.

The project has also produced over 30 8mm film loops which are an integral part of the material.

Nine of these titles are already available from the Longman Group:

The results of selective breeding of two varieties of hen (Theme 2)
The breeding of roses (Theme 2)
Geological time scale I (Themes 2 and 6)
Geological time scale II (Themes 2 and 6)
Looking at changes (Theme 4)
Parental care in wild animals I (Theme 2)
Gliding and soaring (Theme 6)
Cleaning mechanisms of the lungs (Theme 3)
Motor skills in primates (Theme 2)

All loops are accompanied by detailed notes giving suggestions of appropriate methods of use and background information for the teacher.

Other visual material in the form of slides, which are an essential part of the teaching material, can be bought as packs from the Longman Group.

EXAMINATIONS

In 1970, 13 trial schools presented candidates for a Mode 3 CSE examination based on the material, in some cases for two subject passes. A publication, *Examining Nuffield Secondary Science at C.S.E. Level* is being prepared to help teachers using Secondary Science to prepare Mode 3 examinations on the material. This will be published by the Longman Group.

EVALUATION

Evaluator: Miss D.J.Alexander

The evaluation study in 35 of the schools which started work in the trials in 1969 has been concerned with both the use of the material in schools and with the testing of children's attitude to and interest in science, both before and after a year's work with project materials, with particular reference to the criterion of 'significance'.

TRAINING AND DIFFUSION

In addition to the briefing courses for trials teachers, courses conducted by members of the Secondary Science team have been held for LEA science advisers and science lectures in colleges of education and university departments of education.

One hundred experienced trials teachers nominated by LEAs have attended a week's course for teacher leaders organised by the project. Many of these teachers are already active in the work of dissemination not only within their own authority but on in-service course elsewhere.

In-service courses staffed by team members and trials teachers are held at the Centre for Science Education, Chelsea, at a number of colleges of education and at many LEA teachers' centres. In addition courses for teachers of Science in the secondary school organised by the DES are likely to include aspects of the Secondary Science material.

RELEVANT PUBLICATIONS

Schools Council, *Science for the Young School Leavers,* (Working Paper 1), HMSO, 1965, free from the Schools Council. (This is now rather out-of-date. The *Teachers Guide* (see materials) gives a fuller and more recent introduction to the project.)

Schools Council, *Choosing a curriculum for the Young School Leaver* (Working Paper 33), Evans/Methuen Educational, 1971.

FURTHER INFORMATION on the project is available from the project director. A complete set of printed materials are available for reference only in the Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

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INTEGRATED SCIENCE PROJECT

DIRECTORS: **Mr. W. Hall & Mr. B. Mowl**

LOCATION: Centre for Science Education Annexe, Chelsea College, 90 Lillie Road, London, S.W.6.
Telephone: 01–385 5506

DURATION: 1969–1973 **AGE RANGE:** 13–16 **GRANT:** £72,000 (+ £2,880 from the Ministry of Education in N. Ireland for trials in N. Ireland

AREA OF ENQUIRY

The project was established to develop an integrated science course of double O-level value and of a sufficient standard to provide a satisfactory basis for all existing A-level science courses. It is envisaged that this course will require one fifth of the school timetable.

Both Nuffield Combined Science (q.v.) and Schools Council Science 5/13 (q.v.) provide suitable foundations for this course, and it is intended that the third year course can lead to work in either CSE or O-level during the 4th and 5th years.

THE COURSE

It is hoped that pupils will achieve the following aims:

Knowledge

to recall and to understand that information which would enable them to take A-level courses in biology, physics, chemistry or physical science, would enable them to read popular scientific reporting and would enable them to pursue science as a hobby

to understand the importance of patterns to the scientist and to use these patterns in solving problems

to understand the relationship of science to technical, social and economic development and to be appreciative of the limits of science

to be able to recognise scientific problems

Attitudes

to be faithful in reporting scientific work

to be concerned for the application of scientific knowledge within the community

to have an interest in science and technology and be willing to pursue this interest

to be willing to make some decisions on the balance of probability

to be willing to search for patterns, to test for patterns, and to use the patterns in problem solving

to be sceptical about suggested patterns

Skills

to work independently and to work as part of a group

to discover and to use available resources such as books, apparatus and materials

to organise and to formulate ideas in order to communicate to others, and as an aid to understanding, critical analysis, etc.

The content of the work is based on three fundamental ideas – building blocks, interactions and energy. Throughout the three years there will be a continuous search for 'patterns', or important generalisations or explanations, which will be used to solve problems, and the project is using a 'guided discovery' approach to teaching.

Ideally it is hoped that a single teacher will be able to deal with the course. There are possiblities for team teaching, but it would, of course, be antithetical to the nature of integration if the material were divided into subject areas separately taught by specialists.

MATERIALS

These will be published by Longman and Penguin from 1973. There will probably be three pupils' manuals, three teachers' guides, a teachers' handbook, about thirty background books, and three technicians' manuals. These will be structured round the three main areas – building blocks, interactions and energy, and sections at trial stage are as follows:

Part I : Building Blocks (approximately 28 weeks):
including Galaxies, planets, the earth and life; Communities and populations; Organisms; Cells and the development of organisms; Molecules; Atoms and giant structures; Ions and the electron; Atomic and molecular interactions; Competition and co-operation; Classification: Patterns of generalization.

Part II : Energy (approximately 23½ weeks)
including Doing work; Heat; Wave energy; Electrical energy.

Part III : Interactions (approximately 36 weeks)
including Distribution of building blocks; Interactions of atmosphere, land, water and organisms; Selection and evolution; Interactions and patterns of motion; The earth and its history – interactions of atmosphere, land, water and organisms; Interactions of molecules; Interactions of atoms; Interactions of ions and electrons; Some major problems – a) Race; b) Environment; c) Atomic power.

These materials will all be tested in a number of trial schools and evaluated and revised before final publication.

EXAMINATIONS AND ASSESSMENT

Integrated Science will lead to a double credit at O-level. A single credit will also be available. Three papers are provisionally planned:

Paper 1.	An objective paper with an emphasis on multiple-choice items
Paper 2.	Mainly objective, but partly essay. A variety of types of problem will be set
Paper 3.	A paper to test some of the attitude and skill objectives, not tested in Papers 1 and 2. "Open book" questions, precis and comprehension, and essay questions on the social implications of science will be included. The paper will be in two parts – a) questions which rely mainly on pattern finding and understanding; b) questions which rely mainly on problem solving and understanding

Teacher assessment of non-cognitive objectives will also take place.

Further details of assessment in terms of the project's objectives are given in a paper entitled *Evaluation and Assessment* available from the project.

EVALUATION

The project team are evaluating books, teaching methods, pupil attitudes to sections of the work, usefulness of apparatus etc. by means of feedback forms completed by trial school teachers and by teachers' meetings and classroom observation.

DIFFUSION AND TRAINING

It is hoped to include further schools in the trial of materials at a later stage of development. Training courses at the Centre for Science Education are also being planned, and details of these will be available from the project.

RELEVANT PAPERS AND PUBLICATIONS

'Science: Nuffield and Schools Council', *Dialogue* 4, November 1969
Integrated Science Bulletin – available termly, from the Project at 12½p. per annum.
Schools Council Integrated Science Brochure, November 1969. Free from the Project.
W. Hall and B. Mowl, 'What does SCISP mean by Integrated Science', *Education in Science*, June 1970.

FURTHER INFORMATION is available from the project directors or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

Copies of all trial materials and articles listed above are available for reference in the Information Centre.

MEASUREMENT OF UNDERSTANDING OF PUPILS IN LEARNING SCIENCE

DIRECTOR: **Professor F.W. Wagner**

LOCATION: Institute of Education, The University, Southampton SO9 5NH

DURATION: 1966–1969 **AGE RANGE:** 14–16 **GRANT:** £16,335

AREA OF ENQUIRY

The project was established as part of a proposal to evaluate Nuffield O-level science materials, and its aim has been to produce a set of tests of cognitive attainment which can be used to compare the outcome of different teaching methods in O-level science courses. (See also Attitudes to Science Scales and Evaluation of Science Teaching Methods.

PROCEDURE

The function of the test was clearly defined and a list made of subject material to be used in test items. Some 1,000 items were produced by a group of writers commissioned by the project. Groups of these items were put together to form 15 minutes tests, and the tests were tried in a number of schools. The most discriminating and valid items were extracted for use in second stage trials.

FINAL PUBLICATION

The tests and teachers' manual will be used by the Evaluation of Science Teaching Methods in Secondary Schools project during 1971–2, and it is hoped that these will be generally available late in 1972.

FURTHER INFORMATION from Mrs. Gillian Box, Schools Council Information Centre 160 Great Portland Street, London W1N 6LL.

APRIL 1971

'ATTITUDES TO SCIENCE' SCALES

DIRECTOR: **Dr. L.S. Skurnik**

LOCATION: National Foundation for Educational Research, The Mere, Upton Park, Slough, Bucks.
Telephone: Slough (75) 28161

DURATION: 1966–1969 **AGE RANGE:** 14–16 **GRANT:** £17,287.

AREA OF ENQUIRY

This project was established as part of a proposal to evaluate Nuffield O-level science materials and O-level science teaching in general. (See also Evaluation of Science Teaching Methods and Measurement of Understanding of Pupils in Learning Science).

The aims of the project were:

1. to define the attitudes of secondary school pupils towards science
2. to develop reliable and valid scales by which these attitudes may be recognised and assessed
3. to relate the scores on these scales to variables such as the sex of the pupil, ability, etc.

PROCEDURE

Interviews were held with a number of secondary school pupils on their attitudes to science and to school, and this led to the production of over 3,000 attitude statements. The statements were analysed and tested and grouped under five main headings: Science interests, Science in Society, Learning activities in science, Science teachers, and School.

The 70 best items were selected to form two final questionnaires: one in which the items were grouped under the five main headings above, and one in which they appeared in random order.

During the summer of 1968 these questionnaires were completed by more than 2,000 CSE and GCE candidates and the results analysed. The questionnaires have also been administered to a large sample of fourth form pupils who have been similarly assessed by other measures of personality, attitude, and scholastic aptitude.

PUBLICATION

The attitude scales, and examiners manual have been published by the NFER. Prices are as follows:

questionnaires – £2.40 per 100
scoring guides – 35p. per pad
manuals – 7½p.
or a sample set of 1 questionnaire, 1 manual, 1 scoring guide – 40p.

FURTHER INFORMATION is available from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

APRIL 1971

EVALUATION OF SCIENCE TEACHING METHODS

DIRECTORS: **Professor J.F. Kerr & Mr. J.F. Eggleston**

LOCATION. School of Education, University of Leicester, 21 University Road, Leicester LE1 7RF.
Telephone: Leicester (0533) 24211

DURATION: 1970–1973 **AGE RANGE:** 14–16 **GRANT:** £16,300

AREA OF ENQUIRY
This project was established as part of a proposal to evaluate Nuffield O-level science materials and O-level science teaching in general. (See also "Attitudes to Science" Scales and Measurements of Understanding of Pupils in Learning Science).

The purpose of this study is to evaluate the effectiveness of different methods of teaching science by measuring pupils' scores on attainment and attitude tests.

The project aims:

1. to acquire evidence of the kind of teaching styles predominantly used in schools by science teachers
2. to classifiy teachers according to their preferred styles of teaching
3. to compare the attainments of pupils taught by teachers using different styles

PROCEDURE
The project is intending to work with not less than 180 teachers and approximately 5,000 fourth year pupils. The initial task has been to classify teachers according to the kind of teaching method they prefer to use, or which because of constraints they are obliged to use.

The project team then plan:

1. to study the effect of a teacher's preferred style of teaching in a given science subject on pupils' attainment and on the attitude towards that subject in particular and towards science in general; and
2. to examine the extent to which attainment and attitude vary according to the pupil's ability and to the science subject being taught.

It is planned to use the NFER attitude tests (see Attitude to Science' Scales project) and Southampton attainment tests (see Measurement of Understanding of Pupils in learning Science project) for the purposes of comparing pupils taught by teachers using different methods.

FINAL PUBLICATION
There will be three main outputs from this project:

1. A science teacher/pupil interaction observation schedule dealing specifically with cognitive aspects of the transactions which take place between them. A teachers' manual and videotape describing the use of this schedule will be prepared
2. A bibliographic review which will provide a conceptual map of the problems of identifying teachers' 'cognitive style'.
3. A research report.

FURTHER INFORMATION is available from the project directors, or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

APRIL 1971

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NUFFIELD A-LEVEL BIOLOGICAL SCIENCE

DIRECTOR: Mr. P.J. Kelly

LOCATION: Centre for Science Education, Chelsea College of Science and Technology, Bridges Place, London, S.W. 6.
Telephone: 01-736 3401

DURATION: 1965–1970 **AGE RANGE:** 16–18 **GRANT:** Nuffield only

The Advanced Biological Science project is one of the Nuffield Advanced Science Teaching Projects; the others are Chemistry, Physics, and Physical Science.

The materials produced for Biological Science do not represent a rigid syllabus. They have been devised after careful evaluation of the results of extensive school trials so that they can be used in a variety of ways, related to the different circumstances found in schools and the varied abilities, backgrounds, and aspirations of students.

The work has three major objectives:

1. To develop in students the intellectual and practical abilities which are fundamental to the understanding of biological science
2. To introduce students to a body of biological knowledge relevant to modern requirements, through investigating living things and studying the work of scientists . In doing this, students will consider the processes of research and the implications of science for society
3. To develop in students a facility for independent study, developing especially their ability to learn through critical evaluation rather than memorizing by rote

MATERIALS

The subject matter is covered in four units, each of approximately ninety 40 minute periods of classwork and parallel homework or preparation. The units can be taken in various sequences and there are opportunites for flexibility within each unit. The materials, published by Penguin Books from 1970, are as follows:

For the student

A. **Laboratory guides**

Maintenance of the organism 80p
including Interaction and exchange between organisms; Gas exchange systems; Transport between organisms; Transport media; Digestion and absorption; Enzymes and organisms; Photosynthesis; Metabolism and the environment.

Organisms and populations 80p
including Variation in a community; Inheritance and the origin of variation; The cell nucleus and inheritance; Population, genetics and selection; Population dynamics; Organisms and their physical environment; Organisms and their biotic environment; The community as an ecosystem; Evolution and the origin of species.

The developing organism 65p
including Sexual reproduction; Early development; Cell development and differentation; The nature of genetic material; Gene action; Development and the internal environment; Development and the external environment.

Control and co-ordination in organisms 30p
including The organism and water; The cell and water; Control by the organism; Stimuli and their influences; Nerves and movement; Structure and function in the nervous system; Social behaviour.

B. **Study guide**

Evidence and deduction in biological science £1.50
Complementary to the four laboratory guides but devoted to non-practical work involving problem based on a variety of second-hand data.

C. **Topic Reviews**

The artificial kidney	15p
Circulation	25p
Control of breathing	20p
The heart-lung machine	20p
Interactions	15p
Metabolism	25p
Photosynthesis	20p
Key to pond organisms	30p
Biological barriers	July 1971
Human pregnancy & birth	January 1972
Thinking quantitatively I	22½p
Thinking quantitatively II	November 1971
From egg to adult	November 1971

For the Teacher

D. Teachers' Guides

Teachers' Guide I £1.25
Related to the first two laboratory guides

Teachers' Guide II £2.75 (June 1971)
Related to the last two laboratory guides

Teachers' Guide III £3.50
Related to the students' study guide.

Projects in Biological Science 35p
A description of individual project work suitable for students

Laboratory Book (Summer 1971)
information about laboratory facilities, equipment, organisms and chemicals required by the topics covered in the course.

E. **Film loops**

Published by Penguin Books Ltd

Frog sciatic nerve	£6
Locust ventral nerve cord	£5.50
Handling radioisotopes I : Carbon 14	£5.50
Handling radioisotopes II : Phosphorus 32	£5.50
The use of the microscope	£6.00

Published by Rank Audio Visual Ltd.
Thyroid activity
Sitophilus granarius: a pest of stored food
Mosquito trapping
Potato Blight: *Phytophthora infestans*

Published by Macmillan & Co. Ltd.
Development of normal mice
Development of pituitary dwarf mice
Management of normal mice
Technique of taking vaginal smear in mice

Published by Gateway Educational Films Ltd.
Courtship of the Zebra finch
Tern: nesting and parental behaviour

Film: published by Rank Audio Visual Ltd.
Mosquitos and the tourist

EXAMINATIONS

A-level examinations devised for the Nuffield A-level Biological Science Course are set by the Joint Matriculation Board on behalf of all the GCE Boards. Further details from the Secretary, Joint Matriculation Board, Manchester. M15 6EU.

TRAINING AND DIFFUSION

A number of in-service training courses are available and details of these are available from LEAs or the Centre for Science Education. Information about Biology Teachers' Centres, around which many courses are organised, is available from Mr. D.J.B. Copp, Insitute of Biology, 41 Queen's Gate, London, S.W. 7. A list of all schools who were involved in the testing of the project's materials is given in the teachers' guides.

RELEVANT PAPERS AND PUBLICATIONS

Starting Nuffield A-level Biological Science, Centre for Science Education, 1969.
P.J. Kelly and W.H. Dowdeswell,*'The Nuffield A-level Biological Science Project' Journal of Biological Education*, 1970, 4,4
P.J. Kelly and R.E. Lister, 'Assessing Practical Ability in Nuffield A-level Biology' in *Studies in Assessment,* Eds. Eggleston and Kerr (EUP 1969)
J.F. Eggleston and P.J. Kelly 'The Assessment of Attainment in Project Work for A-level Biology', *Educ. Res.,* 1970, 12,3.
P.J. Kelly, 'Implications of Nuffield A-level Biological Science', *School Science Review,* 1970, 52, 179

FURTHER INFORMATION

Copies of *Starting Nuffield A-level Biological Science* are available from Mr. P. J. Kelly, Centre for Science Education Bridges Place, London, S.W.6 and teachers contemplating the adoption of the course are advised to study this pamphlet.

Copies of all published material are available for reference only in the Schools' Council Information Centre, 160 Great Portland Street, London W1N 6LL

NUFFIELD A-LEVEL CHEMISTRY

DIRECTOR: **Mr. E.H. Coulson**

LOCATION: Centre for Science Education, Chelsea College of Science and Technology, Bridges Place, London, S.W.6
Telephone: 01-736 3401

DURATION: 1965–1969 **AGE RANGE:** 16–18 **GRANT:** Nuffield only

The Advanced Chemistry Project is one of the Nuffield Advanced Science Teaching Projects; the others are Biological Science, Physical Science, and Physics. In common with all Nuffield Science projects, the work rests on the belief that courses should not only be based on the principles of the subject which are regarded as of fundamental importance at the present time, but must also consciously seek to develop imaginative thinking on the part of the student.

The objectives underlying the course are based upon those of the Nuffield O-level Chemistry project, although this in no way prevents students following the course who have not done the O-level course. Treatment of the subject at advanced level is based firmly on the establishment and use of three aids to understanding currently seen as being fundamental to the study of chemical systems. These are:

1. The use of the Periodic Table as a means of providing a unifying pattern for the diverse properties of elements and compounds

2. The relationship between structure (both atomic and molecular) and the properties of substances

3. The way in which energy transfers can determine the feasibility and outcome of reactions

These are applied to the investigations of both organic and inorganic systems, but in a manner that does not involve the neglect of preparative work.

The materials represent a coherent chemistry course, and not a collection of related topics. The course is in two sections : a basic course of 19 topics which it is envisaged will take 51 weeks, assuming the availability of six to eight 40 minute periods a week, and one of five special studies which should occupy a further four to six weeks. The course is firmly based on experimental work, much of which is carried out by students, and relies heavily upon class discussion. To cope with the considerable amount of preparation for practical work technical assistance is highly desirable, and there is also a fair amount of constructional work when the course is undertaken for the first time.

MATERIALS

These are published by Penguin Books Ltd, Harmondsworth, Middx, and have been tested in 21 trial schools.

For the Student
Students' book 1 £1.25

Topics 1 to 12: Amount of substance; Periodicity; The masses of molecules and atoms; Atomic structure; The halogens and oxidation numbers; The s-block elements and the acid-base concept; Energy changes and bonding; Structure and bonding; Carbon chemistry, part 1; Intermolecular forces; Solvation; Equilibria: gaseous and ionic.

Students' book II £1.00
Topics 13 to 19: Carbon chemistry, part 2; Reaction rates; Equilibria: redox and acid-base systems; Some d-block elements; Equilibrium and free energy; Carbon compounds with large molecules; Some p-block elements.

Special studies

Biochemistry	65p
Ion exchange	65p
Chemical engineering	£1.35 (June 1971)
Food science	90p
Metallurgy	£1.22½ (August 1971)

Experiment sheets
6 boxes, at £4 each, or £22.50 the complete set.

The chemist in action (September 1971)
A student's text on technological applications of chemistry.

Book of data (Spring 1971)
For use with all Nuffield Advanced Chemistry, Physics, and Physical Science Courses.

Book of chemical data
An interim publication giving tables from the *Book of data* of interest to chemists.

Programmed texts

Amount of substances	(in preparation)
Names and formulae of carbon compounds	(September 1971)
Oxidation numbers	(in preparation)
Ethanol and other alcohols	60p.

For the teacher

Teachers' guide I (Topics 1–12)	£1.50
Teachers' guide II (Topics 13–19)	£1.50
Teachers' guide to special studies	£1.50 approx (August 1971)

Visual Aids – *film loops*

The hydrolysis of bromoalkanes	£6.30
Rate of reaction	£6.30
The Born – Haber cycle	£6.30
The manufacture of plastic articles (May 1971)	
Problems in the use of detergents (May 1971)	
Applications of paper chromatography (May 1971)	
Two-way paper chromatography (May 1971)	
Applications of the mass spectrometer (May 1971)	
Organic analysis by the mass spectrometer (August 1971)	
Testing of plastic film (August 1971)	
Addition to the carbon-carbon double bonds (August 1971)	

Overhead projection originals	£5.50

A list of apparatus and materials required in the course is available from the Association for Science Education, College Lane, Hatfield, Herts, price 25p.

EXAMINATIONS

Advanced and S-level examinations are administered by the University of London School Examinations Department 66-72 Gower Street, London, WC1, on behalf of all examination boards. Teachers should contact the Department before starting the course, as assessment of practical work is carried out throughout the course. The Schools Council has recently set up a research project under Mr. J.C. Mathews at Lancaster entitled 'Investigation into the operation of the Nuffield A-level Chemistry Exam' (q.v.)

RELEVANT PAPERS AND PUBLICATIONS

Education in chemistry, November, 1969, Vol. vi, No. 6, 199-216

FURTHER INFORMATION is available from Mr. E.H. Coulson at the Centre for Science Education

Copies of all published material are available, for reference only, in the Schools' Council Information Centre, 160 Great Portland Street, London W1N 6LL.

NUFFIELD A-LEVEL PHYSICAL SCIENCE

DIRECTOR: Dr. J.E. Spice

LOCATION: 12 Kingsgate Street, Winchester, Hants. (Home address)

DURATION: 1965–1969 **AGE RANGE:** 16–18 **GRANT:** Nuffield only

The Physical Science materials are part of the Nuffield Advanced Science project, the other components being chemistry, physics, and biological science. The course was developed as an integrated approach to physical science in the sixth form and is intended to be a study in its own right as well as being suitable for those wishing to proceed to further study in any of the pure sciences, in technology, and in medicine, pharmacy, etc.

The course has been very flexibly structured to enable schools to adapt the timing, order and emphasis to their own needs. Experience gained in trial schools has indicated that eight 40 minute periods a week are advisable, and that initially at any rate, both a physics and a chemistry teacher should be involved.

CHARACTERISTICS OF THE COURSE

The course has been exhaustively tested, in about eighty schools, with four generations of A-level students. The published materials will therefore, in effect, be the fourth version of the course.

The main components of the course, with the approximate percentages of course time recommended, are as follows:

The basic course	75%
General and materials options	15%
Project	10%

The sections of the basic course are:

1	Forces, motion and energy
2	The elements of the second short period
3	Kinetic theory and phase equilibria
4	Some important chemical reactions
5	Electricity and atomic structure
6	Chemical equilibrium
7	Intermolecular and interionic forces, structures and properties
8	An introduction to chemical kinetics
9	Covalent bonds and the compounds of carbon
10	Group relationships in the Periodic Table
11	Elements of the d-block
12	Simple harmonic motion and wave motion
13	Electromagnetic induction and electrical oscillations
14	Electromagnetic radiation

The general options, of which each candidate is advised to choose two, are:

G1	An introduction to thermodynamics
G2	Rate processes
G3	Rotational motion
G4	The conduction of electricity
G5	Methods of purification and criteria of purity
G6	Molecular spectra and photochemistry
G7	Further organic chemistry

The materials options, of which each candidate should choose one, are:

M1	Metals
M2	Polymers
M3	Ceramics and glasses

Questions on the options are confined to one section of paper III, so that those candidates for whom this suggested coverage is not possible, should nevertheless be able to attain reasonable A-level grades. On the other hand, other candidates may be able to attempt more than two of the general options, so that their choice of questions on paper III can be correspondingly wider.

Both the general and the materials options comprise topics which arise naturally from various parts of the basic course. It should be emphasized that the level of treatment required is not higher than that for the basic course.

For the project, each candidate chooses a practical topic, in conjunction with his or her teacher. This can involve either the design and construction of a piece of equipment, or a small investigation. A short report has to be submitted to the examiners. The project mark (which is determined largely by the teacher) accounts for about 14% of the total A-level mark.

MATERIALS

Publication will be by Penguin Books from mid 1972 as follows:

For the student:

Students' Workbook Volume I	(sections 1–7)
Students' Workbook Volume II	(sections 8–14)
Students' Workbook Volume III	(Options)
Students' Sourcebook	

8mm film loop 'Conservation of angular momentum'.
Nuffield Advanced Science *Book of data*

For the teacher:

Teachers' guide Volume I	(sections 1–7)
Teachers' guide Volume II	(sections 8–14)
Teachers' guide Volume III	(Options)
Introduction and guide	

EXAMINATIONS

An A-level examination in Physical Science is offered by the Cambridge Local Examinations Syndicate on behalf of all GCE Boards. Of university departments which require A-level passes in physics and/or chemistry as conditions of entry, all except the chemistry department at Exeter accept a single A-level pass in physical science as the equivalent.

DIFFUSION AND TRAINING

A number of courses are planned for 1972. Further details of these from Dr. Spice.

RELEVANT PAPERS AND PUBLICATIONS

Four documents covering all aspects of the course are obtainable from Dr. Spice.

FURTHER INFORMATION

A complete set of the printed materials will be available for reference only in the Schools Council Information Centre when they are published.

NUFFIELD A-LEVEL PHYSICS

DIRECTORS: **Dr. P.J. Black and Mr. J.M. Ogborn**

LOCATION: Chelsea College of Science and Technology, 90 Lillie Road, London. S.W.6

Telephone: 01-385 5506

DURATION: 1966–1971 **AGE:** 16–18 **GRANT:** Nuffield Foundation. £10,000 from Schools Council for evaluation.

The physics materials are part of the Nuffield Advanced Science project, the other components being Chemistry, Biological Science, and Physical Science. The course attempts to emphasis the mutual relevance and interaction of different types of thinking in physics, the importance of thoughtful experimenting by pupils working in groups and individually, and the relevance of the ideas and results of physics to society and everyday life. The project team have constructed a course by weaving together key ideas and methods to make a connected whole which makes sense and arouses interest in its own right, which has discernible themes and connects these in fruitful ways, and at the same time serves the deeper aims of equipping students to learn in the future, of understanding physics, of understanding how physics works, of learning to inquire for oneself, of seeing applied and social implications, and of arousing interest and enjoyment in those who study it.

The course has been structured sequentially, each section bringing together earlier material. It is planned on the basis of five terms each of 10 weeks, with approximately seven 40 minute periods a week, at least four of which should be in a laboratory. A subsidiary mathematics course is provided for students who are not taking Advanced Level Mathematics, which would require not less than two periods a week for the first year. Although the Advanced Physics course is consistent with the aims and content of the Nuffield O-level course, it is not impossible for students to enter the A-level course from a more traditional O-level course, though there may be a need for some extra work or practical experience.

MATERIALS

All materials have been tested in some 87 schools and revised in the light of their experience. Groups of schools are established in Tyneside, the North West, Yorkshire, Midlands, W. Midlands, London, S. East and N. Ireland. The course will be published by Penguin Books from late 1971 and is made up as follows:—

For the Student:

Students' guides — 8 units:
- *Materials and Structure*
- *Electricity, Electrons and Energy Levels*
- *Electric Charge, Field and Potential*
- *Waves and Oscillations*
- *Atomic Structure*
- *Electronics and Reactive Circuit*
- *Magnetic Fields*
- *Electromagnetic Waves*

Students' Laboratory Book
Programmed Text — Avogadro's Constant

For the Teacher:

Teachers' Handbook
Teachers' Guides — 8 units as above

For Teacher and Student:

2 units —*Change and Chance*
Waves, Particles, Atoms

Film loops — 8mm
X-Ray Diffraction:

1. *Production of the X-Ray beam.*
2. *Diffraction of Monochromatic X-Rays by a Single Crystal.*
3. *Diffraction of Monochromatic X-Rays by a Power Speciment.*
4. *Determination of the Wavelength using a Diffraction Grating.*

Solving a Standing Wave Equation for the Hydrogen Atom. May 1971

Forwards and Backwards 1 June 1971
Forwards and Backwards II June 1971
Forwards and Backwards III June 1971

Films 16 mm
Change and Chance, a silent computer constructed film. May 1971. 971.
A number of 16 mm. films have been made in conjunction with Rank-Mullard.

EXAMINATIONS

An A-level examination is being offered by the Oxford and Cambridge Board on behalf of all GCE Boards.

TRAINING AND DIFFUSION

A number of in-service courses run by Institutes and Departments of Education are being planned for 1971 – 2 and further details of these may be obtained from the project.

EVALUATION

Evaluator: Mr. P. R. Lawton

An evaluation scheme is being carried out with Schools Council support. Amongst schools in the scheme are those who took part in trials of the Nuffield O-level Physics course, and many who did not.

RELEVANT PAPERS

P.J. Black and J.M. Ogborn, 'The Nuffield Advanced Physics Course', *Bulletin of the Institute of Physics,* Volume 21, 1970.

FURTHER INFORMATION

A package of interim information containing an outline of the course, discussion of its aims, and lists of books, apparatus and other materials required, can be obtained free of charge from the project.

A complete set of printed materials will be available for reference in the Schools Council Information Centre when they are published.

REDUCED SCIENCE COURSES SUITABLE AS A PREPARATION FOR NORMAL UNIVERSITY HONOURS COURSES IN SCIENCE

DIRECTOR: **Professor L.R.B. Elton** **RESEARCH FELLOW:** **Mr.J.M.Kilty**

LOCATION: Institute for Educational Technology, University of Surrey, Guilford, Surrey.
Telephone: Guildford (0483) 71281

DURATION: 1969–1972 **AGE RANGE:** 16–18 **GRANT:** £11,400

AREA OF ENQUIRY

This research project was established to study the reduced science courses offered at the University of Surrey, with special reference to the relevance of such courses to the problem of the swing away from science in the sixth form, and to curriculum development.

The University of Surrey offers four year courses in Physics, Physical Science, Electrical Engineering, Metallurgy and Biochemistry to students from the Arts Sixth, the first year of which is specially designed to meet the needs of this intake. In addition it offers a three year course in Human and Physical Sciences, in which students study pure and applied physical science, philosophy, psychology and sociology, and which has a first year designed to bring students from different subject backgrounds to a common point.

This Project study, which is concentrated on the four year courses, will involve:

1. A factual study of the type of student who is attracted to the course
2. A study of the minimal needs of school work in preparation for the courses
3. A study of methods for bringing students of diverse scholastic backgrounds and attainments to a common basic standard in science, which will enable them to take a normal university science course
4. An investigation as to how far the courses rely on features peculiar to the University of Surrey and how far they would have to be modified to be generally suitable for Universities and Colleges
5. Arising from 2 and 3, assistance in the development of the first year of the courses, both in course design and course materials.

PROCEDURE

A number of tests are being administered in relation to the first two objectives above. In respect of (3) a selection of books and audio-visual aids has been made available to the students, and a survey of how these are used is being undertaken. Experimental materials are being tested, and objective tests have been designed to measure growth in understanding of the various concepts and principles of the courses; these tests are being used in sixth forms for comparative evaluation. For this purpose an item bank has been developed, to which local teachers are contributing. An objective test has also been designed to test the suitability of the existing course as the first year of a wider range of courses (see 4 above). It is planned to develop a series of self-service laboratory experiments for use in the first term.

RELEVANT PUBLICATIONS

J.M. Kilty, 'The Design of Self-Teaching Situations involving 8mm loop cassette film', *Visual Education,* February 1971.

FURTHER INFORMATION is available from Mr. Kilty at the project, or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

ENGINEERING SCIENCE

DIRECTOR: **Professor L.M. Cantor, Schofield Professor of Education and Head of the Department of Education, Loughborough University of Technology.**

LEADER Mr. D.T. Kelly

LOCATION: Engineering Science Development Unit, University of Technology, Loughborough, Leics, LE11 3TU.
Telephone: Loughborough (050) 93 63171.

DURATION: 1970–1973 **AGE RANGE:** 16–18 **GRANT:** £15,000 (+ £25,000 from Loughborough University).

AREA OF ENQUIRY

During recent years the Joint Matriculation Board, in response to requests from schools, has developed a syllabus for Engineering Science at A-level providing an alternative to Physics as a University entry qualification. The Board furnished schools with guidance material, including a set of trial texts and evolved a system of internal assessment and external moderation of practical work consisting of experimental investigations and a project. The examination, which was first held in 1969, comprises an objective test, a comprehension and communication exercise, a project design problem and questions involving decision-making choices on engineering devices and scientific analysis.

In order to extend the guidance to schools Loughborough University of Technology and the Schools Council have established the Engineering Science Development Unit, to produce and test guidance material and pupils' texts.

AIMS

The aim of the project is not primarily the training of engineers and scientists but rather that the material produced should help prepare students adequately for employment or higher education in a wide range of subjects and careers. All students using the material should leave school with an understanding of scientific method, an ability to approach practical problem solving rationally, and an appreciation of the breadth and significance of the major activities which constitute modern engineering. If these aims are achieved the students would also be well prepared for future work in science and engineering.

MATERIALS

The main need is for a students' text which approaches the principal concepts of science and engineering from a consideration of practical stituations, together with a source of guidance, ideas and background information for teachers. The text will need to integrate a wide range of scientific principles and engineering concepts with major areas of application. It will introduce ideas of optimisation, systems, design and evaluation, together with the effects of social and economic restraints. It will also be necessary to produce problems and examples ranging from the relatively straightforward multiple-choice variety to more extensive problems of analysis, comprehension and design. Finally there is a need for guidance on the organisation and conduct of experimental investigations and project work; teachers' and pupils' guides will help translate engineering practice into the school situation.

The material will not create a course in itself, as Nuffield Science materials do, but will provide support for a number of existing courses, primarily those in Engineering Science examined by the Joint Matriculation Board and Associated Examining Board but with some relevance for existing and developing courses in A-level Physics and Engineering. It is hoped to use all material in a number of trial schools prior to publication.

EXAMINATIONS

The JMB examination is accepted by all university engineering and physics departments and the majority of other departments in science and medicine as an alternative to A-level Physics. Examinations in the other engineering courses referred to are not accepted on such a wide basis.

TRAINING AND DIFFUSION

In addition to the production of teaching materials the unit is making an effort to foster in-service training. The briefing conference, July 18th – 24th 1971, for the trial schools will be open to other interested schools and arrangements have been made for regular exchange with the former. Further in-service courses are being organised in co-operation with the University's Centre for Extension Studies. Contacts with University Departments of Education are being established with a view to discussing pre-service training; the Loughborough University of Technology Education Department is organising a degree course in Education and Engineering which should help increase the flow of teachers trained specifically to cope with courses such as Engineering Science.

RELEVANT PAPERS AND PUBLICATION

D.T. Kelly, 'Engineering Science Development Unit', Project Technology *Bulletin 15* October 1970. Available from Project Technology, (q.v.).

Topics in Engineering Science for Teachers. An occasional bulletin produced by the Unit and available on application..

J.M.B. Examination Papers in Engineering Science. Available from the Joint Matriculation Board Manchester 15.

The 1970 paper are reprinted in Project Technology *Bulletin 15.*

FURTHER INFORMATION is available from Mr. D.T. Kelly at the Engineering Science Development Unit or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

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EDUCATIONAL USE OF LIVING ORGANISMS

DIRECTOR: Mr. P.J. Kelly **RESEARCH ASSOCIATE:** Mr. J. Wray

LOCATION: Centre for Science Education, Chelsea College, Bridges Place, London S.W.6. **Telephone:** 01-736-3401

DURATION: 1969–1972 **AGE RANGE:** Whole age range **GRANT.** £21,000

AREA OF ENQUIRY

This research project was initiated by the Institute of Biology/Royal Society Biological Education Committee inspired by the increasing demand in modern biology teaching for living organisms. It has three main objectives:

1. to determine the needs of schools with respect to living organisms and the associated educational, administrative and biological problems

2. to identify and evaluate the usefulness of different species of living organisms for educational and teaching purposes

3. to devise culture and maintenance techniques, suitable for use in schools, and relevant teaching procedures for the effective use of the most appropriate species

PROCEDURE

A questionnaire has been sent to over 300 primary and secondary schools in England and Wales as part of an initial survey to investigate which living organisms are currently found in schools, how they are maintained, how they are used and some problems associated with their maintenance and use. Current work involves the development of maintenance techniques associated equipment and the evaluation of the suitability of various species for use in schools.

Another important aspect of the work is the development of teaching techniques using living organisms, for example the use of "mini-habitats". The project is investigating ways of using small environmental chambers housing a very limited variety and number of living organisms as a flexible study unit suitable for many applications in schools. In this way many ecological topics could be studied in the school laboratory including, for instance, the influence of environmental factors, the flow of energy in a food chain and population numbers and their control.

MATERIALS

The project plans to produce a series of booklets on animal houses, small mammals, genetics, micro-organisms and other topics; wall-charts on, for example, the handling of small animals; a number of other visual aids, and a source book providing a variety of information about the use of living organisms in education.

TRAINING AND DIFFUSION

It is intended that the project will act as a focus of activity in this area of education, and in an advisory capacity.

An international conference for primary and secondary teachers and administrators on the educational use of living organisms, sponsored by the Institute of Biology, is planned for April 1972.

RELEVANT PAPERS AND PUBLICATIONS

John Wray, "Keeping Things Alive", *Dialogue* 7, February 1971.

FURTHER INFORMATION is available from Mr. John Wray at the project, or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

PRE-SCHOOL EDUCATION

DIRECTOR: Miss E.M. Parry

LOCATION: Rachel McMillan College of Education, 28 Albury Street, Deptford, London, S.E.8.
Telephone: 01–692 8220

DURATION: 1969–1971 **AGE RANGE:** 2–5 **GRANT:** £23,600

AREA OF ENQUIRY

This enquiry was commissioned in 1969 to:

1. produce an account which will be of value to nursery school teachers and to others engaged in the care of pre-school children of what are considered to be the best and most useful practices in nursery and other pre-school education today

2. consider how far current practice is meeting the needs of the children, bearing in mind experiments in the United States and elsewhere in the intellectual stimulation of deprived pre-school children and Plowden's dictum that 'the development of language is central to the educational process.

3. consider whether there is a need for the Council to initiate further research and experiment in order to indicate teaching procedures and, if necessary, produce supporting materials which might better foster the growth – particularly the growth of language – of pre-school children

4. to consider the implications for the training of teachers of any suggestions put forward.

The inquiry was also to cover organised out of school activities such as pre-school playgroups.

PROCEDURE

The project has concentrated its inquiry on approximately 100 nursery schools in five areas – London, Midlands, North-East, North-West, South-West and Wales. Teachers in the schools have been asked to complete 15 different questionnaires over a period of twelve months covering such areas as the numbers of children and of staff, links between home and school, the type of equipment, a record of all musical equipment used during a five day period, all stories and poetry used during a five day period, the number and kind of books in the nursery etc. In addition each school has produced at least one, and possibly more, detailed record over a period of one or two terms of an area of teaching that has particularly interested the teacher concerned.

Based on these studies and insight into what the schools have found most valuable, the project hope to produce a series of five guide books dealing with stages of play and the development of language. The first of these will deal with basic elementary learning through the senses and through raw materials; the second with learning from the environment; the third with language through experiences gained from the environment; the fourth will be a specific guide to the choice of poetry, stories and music and the importance of looking and listening; and the fifth will concern different ways of planning rooms, organisation and equipment.

Also based upon the experiences of the 100 schools, ten 8 mm films have been made of children's play, with notes to enable teachers to analyse the learning situations they illustrate. Subjects include the organisation of the nursery day, how children learn from the environment, doll play, water play, sand play, outdoor play, playing with junk, and a film drawing attention to the mathematical experiences children have with play materials.

In addition to its survey of nursery schools, the project has studied play-groups in Leeds, Bristol and Birmingham; the director has followed up work done in America for Plowden with a further visit to look at experimental schemes; and a few colleges of education have co-operated by making teaching practice notebooks available and by staff comments on observation of teaching practice.

FINAL PUBLICATION

In addition to the production of guides and films outlined above, a research report is in preparation to include comparative studies of pre-school education, characteristics of what is deemed good practice, accounts of practice in nursery schools, play-groups, and day nurseries, opening and equipping new nurseries, and adults involved in pre-school education. These should all be available in mid 1972.

RELEVANT PUBLICATIONS

'A bold adventure', *Dialogue* 3, June 1969
'The under-fives', *Dialogue* 8, May 1971.

FURTHER INFORMATION

On the recommendation of this project, an 18 month feasibility study has been established under Dr. Joan Tough at Leeds, entitled Pre-School Language project (q.v.).

Further information on the pre-school education project is available from Miss Parry until July 1971, or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

APRIL 1971

AIMS OF PRIMARY AND NURSERY EDUCATION

DIRECTOR: **Dr. P.M.E. Ashton** **NURSERY PROJECT DIRECTOR:** **Mrs. Gail Exon.**

LOCATION: School of Education, University of Birmingham, P.O. Box 363, Birmingham 15.
Telephone: Birmingham (021)–472 1301

DURATION: 1968–1972 **AGE RANGE:** 3–11 years **FINANCE:** £31,280

AREA OF ENQUIRY:

The purposes of this study are to survey teachers' opinions of the aims and objectives of primary and nursery education and to produce handbooks which will help teachers to draw up their own individual statements of aims and to put them into operation.

Both projects were set up and are run in association with the West Midlands Primary Schools Research and Development Group.

PRIMARY EDUCATION PROJECT

An initial questionnaire was sent to teachers to obtain their views of the aims of primary education. Their statements were rather broad but indicated the range of possible aims. These broad aims were used as a basis of discussion by 38 groups of teachers. Their task, spread over 18 months, was to define precise aims and objectives within each area for middle ability eleven-year olds. This stage of the work is now completed and a final list of 72 aims and objectives represents the collective views of the groups. These statements are now to be submitted to a national sample of teachers for rating.

In addition the project is conducting a number of smaller-scale structures to develop ways of a) structuring aims as a basis for planning work in school; b) describing work in school as a means to exchanging views on methods; c) planning, analysing and evaluating work.

Questionnaires on the aims of primary education have appeared in the *Radio Times, Sunday Times* and *Woman's Own* and some 12,700 replies were received.

A small-scale study is planned in 4 colleges of education to compare tutors' views of the aims of primary education with those of teachers and to obtain information on the specific preparation they consider necessary for students to be able to pursue those aims.

NURSERY EDUCATION PROJECT

The same research techniques which had proved successful in the aims of primary education project were employed. They were the use of an open-ended questionnaire to collect as wide a range of views as possible from a selected sample of qualified nursery teachers; informal tape recorded discussions with groups of nursery teachers on the aims and objectives of nursery education; structured discussions with three separate groups of nursery teachers meeting on many occasions to talk about and clarify the objectives or the means of achieving the aims of nursery education; and an analysis of the data thus collected in such a way as to lead to development of the main instruments of the research structured questionnaire.

The questionnaire was sent to a 40% national sample of nursery schools and a 20% national sample of nursery classes. The final return of the questionnaires, 578 in all, represented an overall return from 74% of the sample schools and classes. Though not perfect, this level of sampling is good and of sufficient scope to allow adjustments to be made from the sample on a national basis.

DIFFUSION

Two national conferences are planned for 1972, intended for LEA advisers, teachers' centre leaders, college of education staff, etc., to inform them of the project's work and to encourage the establishment of local discussion groups.

FINAL PUBLICATION

It is hoped to produce three reports:

1. A report on the main study of the aims of primary education, largely produced by teachers
2. A report on nursery education, including nursery teachers' motives for entering teaching and their views on: a) what would comprise a satisfactory course for nursery teachers; b) the needs of various groups of children for nursery education; c) the role of the nursery teacher; d) the aims and objectives of nursery education.
3. A report on each of the small scale studies.

RELEVANT PAPERS

'A Dialogue in Aims', *Dialogue 7, February 1971.*

FURTHER INFORMATION is available from the project director, or from Mrs Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

COMPENSATORY EDUCATION RESEARCH AND DEVELOPMENT PROJECT

CO-DIRECTORS: **Mr. M. Chazan and Dr. P. Williams**

LOCATION: Department of Education, University College, Old Education Building, Singleton Park, Swansea, Glam.
SA2 8PP **Telephone:** Swansea (0792) 25678

DURATION: 1967–1972 **AGE RANGE:** 4–8 years **GRANT:** £95,750

AREA OF ENQUIRY

The main aims of the project are:

1. To provide screening techniques to enable children in need of compensatory education to be identified at an early age

2. To make longitudinal studies of infant school children in deprived areas, with particular reference to their emotional development and response to schooling

3. To develop language materials which may be used to help culturally deprived children at the infant school stage.

PROCEDURE

The project is organised on the basis of four inter-related but separate units:

Identification Techniques Unit

This unit is concerned with the early identification of individual children needing compensation and is concerned to discover whether it is in fact possible to identify those children who enter the country's schools educationally at risk. The unit works with five year-olds in their first year at school, attempting to identify those whose response to school will have deteriorated by the time they are eight years of age. Six of the infants schools co-operating are in Birmingham and six in Glamorgan.

For each child included in the sample, information was gathered on home background, medical history, ability and teacher assessment of ability. Materials are being devised to test children's linguistic and conceptual ability. In order to assess the educational handicaps it is proposed to obtain information on the nature of the educational provision available to each child at the time of assessment, or any relevant change in the factual information already provided, and also on the child's overall progress at school. This information will be collected during the summer term of 1971 when the children in the sample will be at the end of their infant school careers.

Emotional Development and Response to Schooling Unit

The main aim of this unit is to find out what help and support is needed by deprived children and their families and how the educational development of these children can be fostered. Information is being gathered on the extent to which material and cultural deprivation affect school progress and social and emotional development during the infant school years. The research plan includes a study of the aims, methods and problems of schools involved in the project, particularly in relation to the introduction of reading, the development of language and number skills, and the growth of creative and expressive skills.

An Infant School Amenities Index has been prepared and is available, to educational administrators and research workers, from the project. Indices of 'disadvantage' at home and school have been drawn up. Children have been studied prior to their entry to school and two intensive studies of selected children at school are being undertaken.

Welsh Language Unit is studying two 'matched' groups of infant school children whose first language is Welsh, one group from a deprived background and the other from a non-deprived background. The degree of deprivation is being measured by means of a Social Disadvantage Index.

Programme Development Unit is responsible for the production of language materials for use in infant schools. The unit is experimenting with and adapting commercially produced materials, and also commissioning original work to be used in selected schools in controlled experiments. A handbook of suggestions resulting from teacher discussions in these areas will be produced. It is hoped to make use of a range of audio-visual materials such as film strips, film loops, and tapes, and well-known children's games such as Lotto are also being adapted.

DIFFUSION AND TRAINING

A number of courses on compensatory education for teachers in infants schools and LEA advisers have been run by the project team. A vacation course will be held from 6th – 11th April 1972 for infant school teachers and others on Compensatory Education, at the University College of Swansea. (Details will appear in the national press.)

RELEVANT PAPERS AND PUBLICATIONS

Maurice Chazan and Phillip Williams, 'The Deprived and Disadvantaged', *Dialogue* 2, 1968.

Schools Council, *Project in Compensatory Education,* (Field Report No. 6), 1969. An introduction to the project. Free from the Schools Council.

Bulletin No. 2, May 1970
Progress reports and further details on the work of the four units. Free from the project.

Occasional Publication 1: Compensatory Education : an Introduction, 1968. Articles by Maurice Chazan and Alice F. Laing and an annotated reading list. Out of print.

Occasional Publication 2: Children at Risk 1969. Contributions by Phillip Williams, Neil Ferguson, Brian Fisher and Norman Sims. 30p post free*

M. Chazan and P. Williams (ed) *Occasional Publication No. 3: Compensatory Education and the New Media,* 1971. Contributions by Keith Evans, C.A. Waite, Arthur Evans and Galen Downes. 45p post free*

T. Cox and C.A. Waite (ed) *Teaching Disadvantaged Children in the Infant School,* 1970. 45p post free* A series of articles based upon contributions to a conference for teachers and educationists entitled 'Compensatory Education and the Infant School' held at Swansea, Easter 1969.

Maurice Chazan, Alice Laing and Susan Jackson, *Just Before School,* Blackwell, 1971, 80p. The project's first research report.

Phillip Williams, Peter Congdon, Margaret Holder and Norman Sims *Swansea Test of Phonic Skills,* Blackwell 1971. Manual 40p. Test Sheet 5p.

Alice F. Laing , 'The Construction of an Infant School Amenities Index' *British Journal of Educational Psychology,* February 1971. (The index is available from the project to research workers and educational administrators only).

Maurice Chazan, 'Cultural Deprivation and Reading Readiness' in *Reading Readiness,* University College of Swansea, Faculty of Education 1970.

Phillip Williams, Pat Davies, Roy Evans, Neil Ferguson, 'Season of birth and cognitive development' *Nature,* 12 December 1970.

*These are available from Singleton Bookshop, College House, University College of Swansea, Singleton Park Swansea.

FURTHER INFORMATION
Copies of all items listed above are available for reference only in the Schools Council Information Centre. Further information is available from the project directors or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

Any teachers interested in commenting on the Language Programme or trying out some of the ideas should write to Mr. Galen Downes at the project.

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GIFTED CHILDREN IN PRIMARY SCHOOLS:

DIRECTOR: **Dr. E. Ogilvie**

LOCATION: c/o Schools Council, 160 Great Portland Street, London W1N 6LL. **Telephone:** 01–580 0352

DURATION: 1970–1971 **AGE RANGE::** 5–11 **GRANT:** £4,500

AREA OF ENQUIRY

This one year fact-finding enquiry was established as a corollary to the work of the Working Party on Gifted Children which needed further information on the provisions that were being made for gifted children during their primary years: these were to include those arrangements which, whilst not necessarily being specifically designated as for the gifted, might nonetheless be seen as being particularly helpful in the development of a variety of types of giftedness. "Gifted" is here defined by any child who is outstanding in either a general or specific ability, such as the broad academic or aesthetic, or the more narrow linguistic, mathematical, athletic or musical.

PROCEDURE

The study is operating in four main areas:

1. A survey is being made of all LEAs to discover what help and support they provide for the teaching of gifted children. Do they train teachers to recognize and provide for the needs of outstanding pupils? Do they provide for out-of-school instruction in (say) art, music and mathematics? Do they award scholarships to 'specialist' institutions such as the Royal Ballet School or Colleges of Music?

2. Some twenty schools regarded by LEAs and/or others as making good provision for gifted children are being studied with reference to organisational arrangement, materials and equipment, curricula etc.

3. A small-scale study is being made of teachers' views on the identification and selection of gifted children, and on the provisions that are or ought to be made for them. The views of others are also being sought as being complimentary to those of the profession

4. Study groups of teachers have been established in some of those areas where an interest has been expressed. It is hoped that these will base their discussions on a paper circulated by the project director and that a series of papers will be produced. A few case studies are also being sought.

FINAL PUBLICATION

A report is currently being prepared for submission to the Schools Council.

RELEVANT PAPERS AND PUBLICATIONS

W. Sheridan, "The Gifted Child" *Dialogue* 5, February 1970
"Miscellany" page 14, *Dialogue* 7, February 1971

FURTHER INFORMATION may be obtained from Dr. Ogilvie at 38 Chalbury Close, Preston, Weymouth, Dorset or from Mrs. Gillian Box, Schools Council linformation Centre, 160 Great Portland Street, London W1N 6LL.

APRIL 1971

MIDDLE YEARS OF SCHOOLING

DIRECTOR: **Professor A. Ross**

LOCATION: Department of Educational Research, University of Lancaster, Cartmel College, Bailrigg, Lancaster.
Telephone: Lancaster (0524) 65201

DURATION: 1968–1972 **AGE RANGE:** 8–13 **GRANT:** £39,580

AREA OF ENQUIRY

This curriculum research project grew out of a Schools Council conference on the middle years of schooling held at Warwick in 1967, and attended by representatives from 130 local education authorities and from colleges and university institutes and departments of education. A report of this conference is published as Schools Council Working Paper No. 22 *The Middle years of schooling from 8 to 13.*

The project was not intended to be a middle school pressure group, but to consider the whole curriculum of the middle years of schooling. Its specific brief was to investigate the approaches to learning best suited to the needs of children from 8 to 13, bearing in mind:

1. The need to ease the transition from primary to secondary schooling in the present system.

2. The opportunities provided by the newly established middle schools.

3. The experience already gained with inter-disciplinary studies in junior and secondary schools.

4. Changing views about the content of the curriculum.

It was intended that the project should work in close co-operation with other Schools Council projects in this age range, for example *Aims of Primary Education* (q.v.) *Science 5–13* (q.v.), *Social Studies 8–13* (q.v.) *Religious Education in the Primary School* (q.v.), *Religious Education in the Secondary School* (q.v.) and, more recently *English in the Middle Years* (q.v.) and *History, Geography and Social Science in the Middle Years* (q.v.).

PROCEDURE

The project team's initial task has been a survey of interesting work in upper primary, lower secondary and middle schools. This has involved not simply a description of 'good practice' but an enquiry into the aims and objectives of the middle school curriculum and to what extent these are being achieved.

The project has also been working closely with teachers on areas of controversy within schooling in the middle years. Five papers have been distributed to all teachers centres in England and Wales for discussion, and by summer 1970 the project had received written reports on these discussions from 90 centres involving nearly 3,000 primary and secondary teachers, advisers, inspectors, lecturers etc.

The papers covered a) *Curriculum Priorities,* which asked teachers to consider what range of options had the best claim for inclusion in the curriculum if an additional half day were granted, and what should be cut if the week was reduced by half a day; b) *Curriculum Methods and Contents,* asking for a consideration of what practical steps might be taken to ensure continuity in content and method between primary and secondary school; c) *Primary Secondary Transfer,* asking what kind of problems of transfer the teachers are aware of, to what extent there have been developments between schools to overcome them and the effect of closer co-operation; d) *The Deployment of Teachers,* asking for a consideration of the advantages and disadvantages of specialisation and non-specialisation, of the system of a class teacher to 11 years, and single-subject teachers from 11–13, and of the justification, if any, for change; e) *Time-tables – the Working Day,* involving a consideration of detailed subject time-tabling, wider subject-areas in larger blocks of time, and free time-tabling.

PUBLICATION

A preliminary digest of reports from the teachers centre working parties is available from the project director, and it is intended to incorporate an expanded review of these reports in the project's interim report to be submitted to the Schools Council in mid-1971. A further report is expected at the conclusion of the project.

The team also hopes to produce a collection of slides with taped commentary.

RELEVANT PAPERS AND PUBLICATIONS

Schools Council *The Middle Years of Schooling from 8 to 13,* (Working Paper 22), HMSO, 1969, 37½p.
Alec Ross, 'The whole curriculum for the middle years of schooling', *Dialogue* 4, November 1969.
'No pig in the middle'. Editorial from *Teachers World,* 20 February 1970.
Arthur Razzell, 'Going Middle', *Teachers World,* 15 May 1970.

FURTHER INFORMATION is available from Professor Ross, or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

APRIL 1971

INTERNATIONAL ASSOCIATION FOR THE EVALUATION OF EDUCATIONAL ACHIEVEMENT, Phase 2

DIRECTOR: Dr. D. A. Pidgeon

LOCATION: National Foundation for Educational Research, The Mere, Upton Park, Slough, Bucks.
Telephone: Slough (75) 28161

DURATION: 1967–1972 **AGE RANGE:** 10–18 **GRANT:** £20,000 (+ £22,500 from NFER)

BACKGROUND

The NFER, with a grant from the Schools Council, is one of the research organisations from 20 countries that have formed a consortium to participate in the International Association for the Evaluation of Educational Achievement (IEA). The IEA, whose headquarters are in Stockholm, was established in 1960 as the result of a feasibility study, in order to pursue a programme of comparative studies of educational attainment in relation to different forms of school organisation, curricula and teaching method throughout the world. It is an enterprise unique of its kind and remarkably productive in knowledge about the ways in which educational decisions, levels of investment in education, time allotments, levels of teacher education, broad differences in cultural motivations and similar factors affect the end-product of education.

The countries currently involved in IEA are Australia, Belgium, Chile, England, Finland, France, Germany, Hungary, India, Iran, Ireland, Israel, Italy, Japan, New Zealand, Netherlands, Poland, Scotland, Sweden, Thailand and the USA.

PHASE 1

Phase I was concerned with the outcomes of mathematics teaching in secondary schools and the results were published as *International Study of Achievement in Mathematics: a comparison in 12 Countries* edited by T. Husen, Wiley and Sons 1967. In the course of this project over 12,000 secondary school pupils were tested in this country and additional information collected concerning their performance in O- and A-level GCE examinations. A Schools Council grant enabled the English data to be analysed and a report has subsequently been published – Pidgeon D.A. *Achievement in Mathematics: a National Study in Secondary Schools*, NFER, 1967.

PHASE 2

Building on the experience of the mathematics study, it was decided in 1966 to evaluate education achievement in science (including physics, chemistry and biology), reading comprehension, literature, civic education, French as a foreign language, and English as a foreign language. Civic education and English as a foreign language are not being carried out in this country. It was for Phase 2 that the Schools Council's grant was given.

The work has been split into 3 stages:

1. **Preparatory and pre-testing stage** 1966–1968
   The function of this stage was to construct the following instruments:
   a. Tests in each of the six subject areas for 10 year-olds, 14 year-olds and pre-university students, and for 15 year-olds in the fourth and fifth year of secondary school
   b. Accompanying student, teacher, school and national questionnaires
   c. Descriptive and attitude scales.

Sampling designs and proposals were developed, hypotheses formulated and analysis programmes developed. IEA has also organised international meetings during which attempts have been made to develop a conceptional framework for the cross-national evaluation of educational systems.

2. **Testing in reading comprehension, literature and science,** 1970
   140 secondary and 190 primary schools participated in the testing and an average 30 pupils per population were chosen from each school. The coding and checking of the English and Welsh testing materials has taken place at the NFER and the data from all countries is being processed in the USA and Sweden.

3. **Testing in French** 1971
   French tests, covering listening, speaking, reading and writing have been compiled, and testing is being carried out during the Spring and Summer. The results of these tests will be processed as for the previous subject areas.

FINAL PUBLICATION

An international research report will be published in due course.

RELEVANT PAPERS AND PUBLICATIONS

A.W. Foshay ed. *Educational Achievement of Thirteen year olds in 12 Countries*, 1962, Hamburg, UNESCO Institute for Education.
T. Husen, ed. *International Study of Achievement in Mathematics : A Comparison of 12 Countries*, 1967 2 vols. Stockholm, Almqvist and Wiksell; New York, Wiley.
D.A. Pidgeon, ed. *Achievement in Mathematics*, 1967, NFER.
International Association for the Evaluation of Educational Achievement, Information Brochure 1970. Obtainable from the NFER.

FURTHER INFORMATION is available from the project director or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL

APRIL 1971

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MASS MEDIA AND THE SECONDARY SCHOOL

DIRECTOR: **Professor J.D. Halloran**

LOCATION: Centre for Mass Communications Research, The University, Regent Road, Leicester
Telephone: Leicester (0533) 28437

DURATION: 1967–1971 **AGE RANGE:** 11–16+ **GRANT:** £22,500

AREA OF ENQUIRY

The research is being conducted by the Centre for Mass Communications Research at Leicester University, which was established in 1966 under the auspices of the Television Research Committee. The project was established in 1967 to undertake research which would bring to the attention of teachers new and up-to-date information about the pressures mass media bring to bear on education from the outside.

The Centre was asked to prepare a research design which would investigate:

1. the ways in which the mass media impinge upon schools, and
2. the relationship between children's use of and attitudes towards the media on the one hand and teachers' attitudes towards the media (including the way these occur or are used in school) on the other.

From their pilot studies and in preparing their research design, the team took note of the following guiding principles:

a. People use the media to meet their needs and media behaviour should therefore be studied in relation to the experience, interests, hopes and future expectations of the individuals concerned

b. Pupils from different backgrounds will experience school in different ways; there will also be variations in commitment to school. The project is therefore examining the hypothesis that there is a link between low commitment to school and high commitment to what has been termed 'youth culture'

c. Teachers' attitudes to the media and the way these are reflected in the classroom vary considerably. Some teachers see their values as being opposed to those presented by the mass media, while others see the media chiefly as aids in facilitating their task rather than impeding it. The project seeks to measure and evaluate this variance together with an attempt to do the same for schools as institutions. It seeks to find out whether there is any difference in this 'media commitment' between types of schools.

PROCEDURE

The research design was based on pilot studies and the guiding principles outlined above. It is in two parts: a *teacher survey* and a *pupil survey*.

The Teacher Survey was completed in 1969 and an interim analysis of the results was then made. Information was sought by means of a questionnaire handed to all teachers in some 90 schools, and can be grouped under the following headings:

i. Teachers' personal use of the mass media.
ii. Teachers' attitudes towards the mass media.
iii. Teachers' assumptions about the influence and effects of mass media both generally and with regard to pupils' work and behaviour.
iv. The extent to which teachers introduce mass media content into their normal teaching routine.
v. The extent to which teachers make use of audio-visual material (including educational television) in their teaching.

The main aim of the teacher survey was to provide basic information for use at the second stage of the research on the part played by the 'media orientation' of teacher and/or school in the media behaviour of pupils.

The Pupil Survey. This engaged the attention of the project for most of 1969/70 and the results are now being written up. Information has been sought under two main headings, namely, *school commitment* and *media behaviour.* Under the first heading information has been obtained about such things as academic values, involvement in school activities, and the pupils' own views of school. Under the second heading information has been gained on general leisure time behaviour patterns, including time spent with the various media, and an attempt has been made to find out what particular needs are being met and what functions are being served by different media use.

FINAL PUBLICATION

A research report is currently being prepared for submission to the Schools Council. The project is also preparing a *Working Guide to the Use of Mass Media in Teaching.* This arises from many requests received by the project staff for information about research which has been done in the field, and asking for help in designing specific classroom courses or projects. It is concerned with mass media products designed exclusively for use in schools and it is confined to those media which children meet in their own day-to-day activities: newspapers magazines, advertisements, pop music, films and television. Emphasis is laid on the inter-action between personal and social needs of the child and the content of the media; one idea discussed is that of a 'pop culture'. The pamphlet will contain an extensively annotated list of references, resource materials and suggestions for class exercises and projects.

FURTHER INFORMATION is available from the project director or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL

APRIL 1971

CAREERS EDUCATION AND GUIDANCE

DIRECTOR: Mr. K. Devine

LOCATION: Not decided at time of printing, (Director's home address: 18 Gladeside, Bar Hill, Cambridge CB3 8DY).

DURATION: 1971–1974 **AGE RANGE:** 13–18 **GRANT:** £75,000 (+ £60,000 from industrial and other organisations)

AREA OF ENQUIRY

This project has been established to produce classroom materials which will help the pupil to get a realistic foretaste of the sort of experiences and problems he will face in working life. Its main aims are:

1. to develop a range of materials varying in complexity and appropriate for different ages and the whole ability range. These will be designed to arouse interest through model situations, simulated work problems for individuals and groups, work analysis, and will provide personal responses to the demands of pupils. All will be supported by audio-visual aids and will provide a series of graded stepping stones by which understanding through experience can be gained

2. to explore methods and types of courses – from separate careers study to work integrated into other subjects – through which these materials can be used most effectively in the classroom and through which the way can be paved towards actual work experience

3. to study the practical organisation of careers information in schools, so that pupils stimulated by the use of new materials and methods may pursue their own enquiries into detailed careers information more purposefully

4. to examine the setting of this work within the curriculum and total guidance programme of the school – with particular reference to careers departments, tutorial care, counselling, the Careers Advisory Services, and work experience

5. to pay attention to the problems of adapting its materials to suit particular local situations

6. to establish a programme of evaluation which will make use of the informed comments of careers teachers, careers officers and organisations

The concept of careers education used here is not primarily concerned with specific job selection, but with stimulating an understanding of the many varieties of work and their interdependence. It is seen, not as a short-term burst of information-giving, but as an active and continuing educational process, which should involve careful co-ordination with the system of personal and educational guidance in the school.

PROCEDURE

It is envisaged that the project should work in close co-operation with the many organisations already working in this field, and that a variety of 'units' should be established, each comprising a number of schools, industrial concerns and Careers Advisory Officers. It is hoped that by consultation over the type of materials already available or needed, the content of courses and the development of mutual support and inter-action, the work of these groups could be of considerable significance in developing materials, ideas and understanding. The Confederation of British Industry and the T.U.C. have indicated their clear moral support; the Central Youth Employment Executive its financial support; and the Careers Research and Advisory Centre are likely to be closely involved with the project's work.

FURTHER INFORMATION from the project director, or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

APRIL 1971

NORTH WEST REGIONAL CURRICULUM DEVELOPMENT PROJECT

DIRECTOR: Dr. W.G.A. Rudd.

LOCATION: School of Education, University of Manchester, Manchester M13 9PL **Telephone:** 061–273 3333

DURATION: 1967–1972 (Schools Council support until 1970) **AGE RANGE** 13–16+ **GRANT:** £30,000 (+ up to £19,000 annually from LEAs)

AREA OF ENQUIRY

The project was established in 1967 to study curriculum development in local centres. It comprises a consortium of fifteen local development centres established and maintained by thirteen LEAs, Lancashire, Blackburn, Bolton, Blackpool, Burnley, Bury, Manchester, Oldham, Rochdale, Salford, Stockport, Warrington and Westmorland, whose work is co-ordinated through the University of Manchester School of Education and controlled by a steering committee with a majority of practising teachers.

The project was founded upon Schools Council Working Paper No.10, *Curriculum Development: Teachers Groups and Centres,* and thus in addition to developing new materials for use with early leaving pupils, is also studying in detail the implications of the two basic principles of curriculum development work in local centres:

1. That motive power should come primarily from local groups of teachers accessible one to another
2. That there should be effective and close collaboration between teachers and all those who are able to offer co-operation

The Schools Council's grant was to support the establishment of the regional centre. Although the Council considers as a rule that local curriculum development is a local responsibility, it was felt in this case that the experience gained by the project in organising group development would have a wider significance.

PROCEDURE

In 1967 regional groups were set up to prepare handbooks on objectives in ten curriculum areas for early-leaving pupils in anticipation of the raising of the school leaving age. These were English, mathematics, science, religious and moral education, social education, boys' crafts, girls' crafts, music, art and studio subjects, and physical (including health) education. The ideas in these handbooks were studied in local centres, and there emerged from the statement of objectives a recognition of the need to plan complete courses.

In spring 1968, all secondary teachers in the region were invited to submit details of new teaching programmes they wished to develop for early-leaving 4th and 5th year pupils, and from the 100 replies received, seven were adopted as regional schemes:

Experimental methods of teaching and school organisation (particularly team teaching)

English
Moral Education
Technology
Domestic Studies
Social (and health) education
Creativity in the arts

Development teams of 25 teachers in each of these areas have been developing new courses, and testing new ideas and new materials, in a considerable number of schools. These are being evaluated, revised and prepared for publication.

MATERIALS

It is hoped that 4th year materials will be published during 1972, and 5th year during 1973. Five groups – English, Social Education, Health Education, Technology and Domestic Studies – have produced multi-media kits for two-year courses. The Creativity group (art and music) is preparing a report and written descriptions or examples of stimulus situations, e.g. a set of slides on man-made forms and natural forms. The team teaching group is preparing a research report comparing situations:

a) where the school chose both the team of teachers and its own programme;

b) where a school used materials provided by the group.

A report of the project's work and experience will also be produced. This is expected to reach the Schools Council late in 1971 and to cover work done in the Project between April 1967 and July 1971.

EVALUATION

The materials are being assessed in terms of the course objectives and revised in the light of this assessment. There is also a programme of classroom evaluation to assess the impact of the course upon the pupils.

EXAMINATIONS

Contacts have been made with the two local CSE boards who are willing to accept proposals for Mode 3 examinations based on the project's courses.

RELEVANT PAPERS AND PUBLICATIONS

Forward from Newsom: a call to action, Proposal for the establishment of a regional scheme of curriculum development for raising the school leaving age. November 1966. Free from the project.

Schools Council *Raising the School Leaving Age* (Working Paper 2), HMSO, 1965, 17½p.

Schools Council *Curriculum Development: Teachers Groups and Centres,* (Working Paper 10), HMSO, 1967, 10p.

W. G. A. Rudd, 'Objectives as Reference Points in curriculum development', *Education of the Deaf* December, 1967.

W. G. A. Rudd, 'The North West Regional Curriculum Development Project', *Forum* 10, 1968.

W. G. A. Rudd, 'Curriculum innovation: regional and local efforts', in Bar, M.R. *Curriculum Innovation in Practice,* Edge Hill College, Ormskirk, 1969.

W. G. A. Rudd, Curriculum model building' in Butcher H.J. and Pont H.B. *Educational Research in Britain 2,* ULP 1970

'Curriculum in the North West', *Dialogue* 7, February 1971.

Schools Council *Choosing a curriculum for the young school leaver,* (Working Paper 33), Evans/Methuen Educational 1971, 26p.

FURTHER INFORMATION is available from the project, or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

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INDUSTRIOUSNESS AND ACHIEVEMENT IN SCHOOL

DIRECTOR: **the late Professor F.W. Warburton.**

LOCATION: Department of Education, University of Manchester, Manchester M13 9PL.
Telephone: Manchester (061)–273 3333

DURATION: 1966–1969 **AGE RANGE:** 14–16 **GRANT:** £10,000

AREA OF ENQUIRY

This research project was commissioned as part of the Schools Council's programme for the raising of the school leaving age, in order to gain information about what factors affected pupil achievement in schools. The basic strategy of the project was to examine the relationship between certain *predictors* (such as ability, attainment personal qualities, attitudes, interests, motivation, social background at home and school), and the *criterion* of industriousness.

PROCEDURE

From a cross-section of schools, 800 children nominated by the schools, were studied. The team organised their research within the following framework of questions:

1. what part is played by the pupil himself in school achievement?
2. what part is played by ability in school achievement?
3. why is there differentiation of achievement in different school subjects?
4. what part is played by home background in school achievement?
5. what part is played by the school in achievement?
6. what is the influence of the tone of the pupil's school?
7. at what stage in their school careers do some pupils become allergic to education?
8. how are these major influences related to one another in producing high or low achievement?
9. why do some pupils who start well drop behind, and vice versa?
10. why do some pupils become allergic to education?

SUMMARY OF FINDINGS

A summary of the sections on the pupil himself (nos.1–5 above) would suggest that lack of ability and perhaps a natural slowness play an important part in allergy to education. Children allergic to education tend to become disinterested in all the more academic school subjects, and their outside interests are of a social rather than an educational nature. They also acquire a poor opinion of their own qualities, their moral attitudes are poor, their homes give them little help and most of them are limited in every way, culturally, educationally, economically and psychologically. It is thus hardly surprising that allergic children fail to identify themselves with the school and have little interest in school activities. The discipline strikes them as too rigid and they are more critical of their teachers than industrious children are. The aims of the school are seen as vocational rather than as leading to personal fulfillment, and such liking of school as they have rests on its providing them with opportunities to make friends. The majority of children allergic to education were found to be extrovert and anxious.

Apart from taking advantage of this interest in social affairs which influences every aspect of schoolwork, there seems little that teachers can build on in order to improve these children's attitudes and achievement, except possibly by encouraging their ability in artistic and creative work and, to a lesser extent, in their outdoor activities.

In relation to questions 6 to 10 above, allergy was found to have somewhat different features in boys and girls, girls being more difficult temperamentally and less interested in careers, but less susceptible to the influence of the gang. Pupils from higher socio-economic classes were found to have more favourable attitudes towards the schools and teachers than pupils from lower social groups, and school allergy was found to be determined by factors within the school, home and the pupil himself in that order of importance.

PUBLICATION

The Schools Council decided not to excercise its option to publish this report, but there is a copy in the Schools Council Information Centre which may be consulted by bona fide researchers.

FURTHER INFORMATION from Mrs. Gillian Box, Schools Council Information Centre 160 Great Portland Street, London W1N 6LL.

APRIL 1971

CURRICULAR NEEDS OF SLOW LEARNING PUPILS

DIRECTOR: Mr. W.K. Brennan

LOCATION: Cambridge Institute of Education, Shaftesbury Rd, Cambridge.

DURATION 1971–1973 **AGE RANGE:** 5 – 16 **GRANT:** £21,000

AREA OF ENQUIRY

The project was set up on the recommendation of a Working Party concerned with the needs of handicapped children, as the first in the Schools Council's programme of work in special education. The Working Party considered it necessary to look at the curriculum as a whole rather than to develop particular curriculum areas. It seemed to them essential that the curriculum for slow learning children should not be a diluted or slower paced version of the normal curriculum, but must take into account the possibility of a qualitative difference in the process of concept formation which may follow from a slower and sometimes uneven rate of learning. The group of children to be considered is to include slow learning children in ordinary schools, as well as children attending special schools.

The aim of the project team is thus to examine work already being done with slow learning pupils, and to produce a curriculum bulletin describing models of curricula which appear to meet certain agreed aims which reflect the effect of differing environments on curriculum content, and the inter-action of school organisation with curriculum aim and content.

PROCEDURE

It is envisaged that during the first six months the project will attempt to convert general curriculum aims into more specific objectives; this will also include:

a. a study of relevant literature and of existing projects such as that of the National Bureau for Co-operation in Child Care on educationally sub-normal school leavers;

b. some schools and departments to be visited as examples of good practice will be suggested by HM Inspectorate LEAs etc.

c. the collection of information from the nominated schools, which will enable the director to select a group for depth study.

During the second stage, the team will spend most of its time in selected schools, collecting for analysis examples of pupils' work; these schools will include primary, secondary, and special. The team will also study pupils' work attitudes, general knowledge and social competence in the light of their teachers' aims as well as those already identified by the project.

FINAL PUBLICATION

It is hoped that an analysis of the research will be written up as a curriculum bulletin.

FURTHER INFORMATION is available from the project director (from September 1971) or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street London, W1N 6LL.

APRIL 1971

USE OF PROJECT MATERIALS BY TEACHERS OF DISADVANTAGED PUPILS

DIRECTOR: **Mr. R. Gulliford**

LOCATION: School of Education, University of Birmingham, P.O. Box 363, Birmingham 15.
Telephone: 021–472 1301

DURATION: 1971–1972 **AGE RANGE:** 5–16 **GRANT:** £6,000

AREA OF ENQUIRY

Schools Council Working Paper 27 *Cross'd with adversity*, prepared by the Working Party on Compensatory Education, recommended that 'as a matter of immediate urgency the Schools Council should establish a development project to ensure that pupils with language difficulties are not thereby prevented from taking advantage of the wider range of curriculum opportunities which development work is creating'. It was felt that the least successful fifteen to twenty per cent of the school population in special schools, remedial classes and departments, the lowest streams of secondary schools, or in mixed ability groups may not be benefiting from recent curriculum development work, and this one-year project was established:

1. to examine the problems experienced by a broad spectrum of pupils with learning difficulties – both the under achieving and slow-learners – when using existing materials produced by certain Council projects, with a view to isolating the particular difficulties caused by the materials as originally presented
2. to consider ways in which materials have been used – or adapted – by teachers and by project teams to make them acceptable to pupils at the lower end of the ability range with a view to examining the principles upon which successful uses and adaptations have been based
3. to publish a survey of good practice, including descriptions of particularly successful adaptations which would, among other things, attempt to consider the factors essential to the successful use of materials with pupils at the lower end of the ability range, and, in particular, with limited linguistic resources.

PROCEDURE

After an initial survey of those project materials most relevant to the pupils concerned, it is planned to visit schools where these materials are being used, and possibly to initiate the use of certain project materials with slow learners.

It is planned finally to publish a curriculum bulletin for teachers of 'disadvantaged' pupils.

RELEVANT PUBLICATIONS

Schools Council, *Cross'd with adversity: the education of socially disadvantaged children in secondary schools* (Working Paper 27), Evans/Methuen Educational, 1970, 56p.

FURTHER INFORMATION from the project director (from September 1971) or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

APRIL 1971

BILINGUAL EDUCATION IN THE ANGLICIZED AREAS OF WALES

DIRECTOR: **Mr. G.E. Richards**

LOCATION: Glamorgan Education Committee, 3 Gartholwg, Llanilltud Faerdre, Pontypridd, Morgannwg.
Telephone: Newton Llantwit (044 362) 3640

DURATION: 1968–1975 **AGE RANGE:** 5–7+ (pilot study) 5–11 (main project) **FINANCE:** £107,754

AREA OF ENQUIRY

This pilot study into bilingual education in primary schools in the anglicized areas of Wales was set up to enable the initially monoglot English-speaking child to achieve by the end of the primary stage of education a standard of attainment in Welsh comparable to that attained at the same age in English by the initially monoglot Welsh-speaking child. It was felt that achievement of this standard in Welsh and English would lead to fuller participation in both cultures.

The project's main aims are:

1. To initiate schemes for the teaching of Welsh to primary school pupils whose first language is other than Welsh to a degree that will enable them to become bilingual at an early age

2. To consider the methods best suited to the rapid acquisition of Welsh by such pupils

3. To prepare and evaluate materials for classroom use

4. To provide in-service training for teachers engaged in the project

PROCEDURE

Twenty eight infant schools in the anglicized areas in eleven Welsh counties were involved in the pilot study. The project team prepared eight teachers' handbooks, together with listening books and relevant tapes, and further material for use in these second language lessons such as recorded songs, simple plays, hymn tunes, prayers, classroom and playground games, action songs, simple dance tunes, rhythm movement activities, physical education, nature lessons, puppet theatre work and graded Bible work.

The team visited the 28 schools at monthly intervals and supervised internal evaluation by means of written reports and taped linguistic records of the children's development, together with monthly questionnaires received from the schools.

As a result of the pilot study, a further grant has been awarded to continue the work being done in the original 28 schools, to extend bilingual education to other classes at the infant level, and to follow the infants through the junior school. It is also hoped to involve further schools in the project's work. It is assumed that before leaving the infant stage the children will have become sufficiently bilingual to be able to profit from instruction through the medium of both languages.

MATERIALS

The eight teachers' handbooks and other materials outlined above will be revised in the light of experience in the final schools. The project will also be developing further materials such as graded readers, project schemes for junior levels, graded commentaries for film, film-strip and cine-loop films, graded drama work, listening books etc. These will all be published in due course.

TRAINING AND DIFFUSION

The project assumes that fluent Welsh-speaking infant/junior trained teachers will be in charge of classes using project materials, and courses are being organised in association with LEAs teachers' centres, colleges of education and at the National Language Unit. Details of these are available from the project.

FURTHER INFORMATION is available from the project director or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

APRIL 1971.

SCIENCE AND MATHEMATICS IN WELSH MEDIUM SCHOOLS

DIRECTOR: **Mr. M. Griffiths**

LOCATION: Faculty of Education, Cambrian Place, University College of Wales, Aberystwyth, Cardiganshire.
Telephone: Aberystwyth (0970) 7872

DURATION: 1969–1972 **AGE RANGE:** 5–12 **GRANT:** £24,000

AREA OF ENQUIRY

The project was commissioned by the Schools Council's Committee for Wales to investigate the special problems of securing curriculum reform in the teaching of science and mathematics through the medium of Welsh in children up to 12 years old. It was felt that whilst for 300 years the English language had been used and developed as a medium of communication for scientific ideas as a part of English culture, Welsh culture is predominantly literary and musical and has not, until very recently, been influenced by scientific ideas and developments.

Investigatory approaches require a great deal of discussion between children and the teacher and also a far greater use of written language in the learning of science and mathematics. These discussions form the essential basis for success and it is therefore imperative that Welsh speaking children be given the opportunity to conduct these discussions and to write about their experiences through the medium of their mother tongue.

The main aims of the project are:

1. To encourage an investigatory approach in the learning of science and mathematics
2. To aid the teacher to adopt a flexible approach to his teaching and to support him during the transitional period
3. To prepare suitable materials for teachers and children

PROCEDURE

The project is concerned to achieve for Welsh speaking children the same sort of child centred investigatory approach to learning as has been achieved for English children by the Nuffield Primary Mathematics (q.v.) and Junior Science projects.

In seeking to provide suitable books for children and their teachers, the project makes use of the already existing lists of mathematical and scientific terms prepared by the University of Wales School of Education. It is hoped that the provision of such books will increase the facility of both teachers and children in using the Welsh Language to discuss mathematical and scientific topics. The books for children are aimed at arousing their enthusiasm towards mathematics and science, making them aware of their surroundings and creating in them an urge to investigate it further.

MATERIALS

Two teachers' guide and 60 pupils' books are being developed and tested in some 65 Welsh speaking schools. These are as follows:–

Teachers' guides

1. *Ymchwilio Am Wybodaeth* (Researching for Knowledge)
   This deals with the aims of the approach, suggests suitable starting points, gives a number of case studies and lists suitable apparatus and books which might be found useful.

2. *Sylfeini Mathemateg* (Foundation of Mathematics)
   This covers the work in Mathematics. It will contain chapters in the following:

a) Rhif – Number
b) Arian a Ffracsiynau – Money and Fractions
c) Hyd, Pwysau a Chyfaint – Length, Weight and Volume
d) Arwynebedd a Siap – Area and Shape
e) Graffiau – Graphical Representation

Pupils' Books (6 – 9 years) in Welsh
Snow and Ice; Sun; Rain; Wind; Air; Water; Heat; Magnetism; Sound; Light; Shapes; Measuring.

Pupils' Books (9 – 12 years) in Welsh
Set of books on the Weather, Rocks, Mechanics, Air, Water, Light, Sound, Electricity, Heat, Magnetism, Nature Study, Money, Shape and Size, Statistics, Measuring, Numbers.

EVALUATION

It is planned to evaluate each draft publication by means of a questionnaire which will be sent to each school. Materials will be amended in the light of these comments.

TRAINING AND DIFFUSION

A number of inservice training courses designed to enable teachers to adopt the project's approach are held at both local and national levels. Teachers wishing to join such courses are advised to contact the project director. A conference of representatives from LEAs including teachers centre leaders and lecturers from colleges and institutes of education is planned for 1971/72.

RELEVANT PUBLICATIONS

Primary Education in Wales: a report of the Central Advisory Council for Education (Wales) HMSO, 1967. £1.62½ (The Gittins Report).
Schools Council *Science in the primary school* (Field Report 5), Free from the Schools Council
Merfyn Griffiths, *'Darganfod Rhif'*, UCAC, 1968.
Merfyn Griffiths, "Project Dysgu Gwyddjoniaeth a Mathemateg", *Yr Athro,* September, 1969.
Materials published by the Nuffield Mathematics Project and Nuffield Science Project.

FURTHER INFORMATION

Items listed above are all available for reference only in the Schools Council Information Centre. Further information is available from the project, or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

ATTITUDES TO AND MOTIVATION FOR THE LEARNING OF WELSH AND ENGLISH IN WALES

DIRECTOR: **Mr. D. W. H. Sharp**

LOCATION: Department of Education, University College, Singleton Park, Swansea, Glamorgan. SA2 8PP
Telephone: Swansea (0792) 25678

DURATION: 1967–1971 **AGE RANGE:** 3 age groups – 10+ 12+ 14+ **GRANT:** £34,000

AREA OF ENQUIRY

The aims of the project are:

1. to establish patterns of attitude to Welsh and to English in three age-groups in schools throughout Wales
2. to determine whether there is a significant relationship between attitude to each language and attainment in it
3. to examine other factors in the language learning situation in Wales – information gathered includes the provision made for the teaching of the two languages and the pupil's use of language both inside and outside the classroom
4. to consider methods and materials used in the teaching of the two languages

PROCEDURE

Stage 1 testing involved the administration of attitude scales and questionnaires to the whole random sample, which was school-based and stratified into three linguistic "bands" according to the percentage of Welsh speakers in the area. Bilingual schools were tested separately. During Autumn 1969 these scales and questionnaires were completed satisfactorily by approximately 6½% of the total school population in each of the three age-groups. Thurstone-type attitude scales were used to measure attitude towards Welsh and towards English and a semantic differential test was used with the 14 year-old pupils only. Four questionnaires were designed for LEAs, and headteachers, teachers and pupils in the sample schools.

Attainment tests were administered to a sub-sample of sample schools in Summer 1970. These included a composition test to be written by the pupil in his first language and an objective test in Welsh as a first or as a second language, and in English, for both first and second language pupils.

A large number of practising teachers have contributed to the preparation of both attitude scales and attainment tests. Some 180 teachers in 16 groups have been meeting monthly all over Wales, and are now discussing teaching methods and materials in Welsh and English. It is hoped to produce papers on different aspects of these discussions.

RELEVANT PAPERS AND PUBLICATIONS

Attitudes to Welsh and English: An Interim Report 1970, available from Singleton Bookshop, College House, Singleton Park, Swansea, Glam. SA2 8PP, price 40p (post free). This report gives an account of the main lines of development up until September 1969 and appends copies of the attitude scales and questionnaires.

FURTHER INFORMATION is available from the project director or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

IMPLICATIONS OF SOCIAL AND CULTURAL CHANGE FOR SECONDARY EDUCATION IN WALES

DIRECTOR: **Dr. A. Gwyn Jenkins**

LOCATION: Departments of Education and Sociology, University College, 34 Cathedral Road, Cardiff CF1 9YG
Telephone: Cardiff (0222) 20781

DURATION: 1967–1971 **AGE RANGE:** 11–18 **GRANT:** £34,000

AREA OF ENQUIRY

Considerable social, industrial, economic and cultural changes have occured in Wales during recent years, and it was felt that little had been done in the schools to take account of changing patterns of heavy industry, population change, new towns and depopulation. The project was therefore established to study:

1. the existing curriculum of the secondary schools, especially the curriculum of the 15–18 year-old pupils, and its assumptions
2. the more significant changes in the social, industrial and cultural pattern of representative areas of Wales
3. the degree to which these changes are important for the curriculum, and to offer suggestions for relating the curriculum to these changes wherever it is important to do so

PROCEDURE

Information for 1938, 1948, 1958 and 1968 is being collected, together with significant material from intervening years, relating to secondary education and selected major demographic, technological, economic and cultural changes.

Sociological component

The concept of 'social change' is here understood to mean any change in the values, roles, institutions and socio-cultural systems of society. The research team have examined two main problems:

1. Career opportunities for those with industrial training and part-time further education, and the seeming discrepancies in opportunity between Wales and England.
2. Full time higher education as a means of upward social mobility and the apparently decreasing effect of such education in terms of mobility in Wales as compared to England. The project has also investigated the effect of bilingualism on career choice and mobility.

Educational component

In addition to the historical review of the work of the schools in the broad context of Welsh education, the main elements in the research programme are:

1. A survey of the curricula of all secondary schools in Wales at present, including independent and special schools.
2. A survey of pupil attitudes from a broadly based representative sample of Welsh secondary schools.
3. A more intensive study of a highly selected sample of schools and the attitudes of pupils within them.
4. Interviews with teachers, head teachers, administrators and others whose work brings them into contact with secondary schools.

FINAL PUBLICATION

A research report is currently being prepared for submission to the Schools Council with a view to publication.

FURTHER INFORMATION is available from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

APRIL 1971

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WELSH AS A FIRST LANGUAGE AT THE SECONDARY STAGE

DIRECTOR: Dr. T. Emrys Parry

LOCATION: Departments of Linguistics, Education and Welsh, University College of North Wales, Bangor.
Telephone: Bangor (0248) 2501.

DURATION: 1969–1974 **AGE RANGE:** 11–16 **GRANT:** £51,000

AREA OF ENQUIRY

The project is based upon recent research work into the grammatical structure of varieties of contemporary Welsh. The aim is to produce, for the teaching of Welsh as a first language, materials which will be founded on a prior analysis of the language and on observation of usage, relevant to contemporary life in Wales, and graded and structured for classroom presentation.

PROCEDURE

A new grammar has been prepared, based not on knowledge *about* the language but on the deeper meaning and use of language, on the lines suggested by Chomsky's work, and the linguistic study therefore places due emphasis on the oral aspects of language. The linguistic data will be completed by October 1971, and the publication of the source book of grammar should be available in 1972.

Source books are being prepared which will be suitable for different age groups and which have as their aim the development of the linguistic competence of the children; they will consist of prose material of a variety of kinds and some poetry, and will provide suggestions for class discussion and creative work. The emphasis will be not on the acquisistion of mechanical skills but on the provision of experience of language over a wide range of subjects, to broaden pupils' understanding and enrich their language through exploiting their natural interests. There will be notes of guidance for teachers. The intention is to produce first a series of four or five books for the age range 11–13, and the first of these is now being tested in 14 secondary schools.

FURTHER INFORMATION is available from the project or from Mrs. Gillian Box, Schools Council Information Centre, 160, Great Portland Street, London W1N 6LL.

SAMPLE SURVEY OF PARENTAL ATTITUDES

DIRECTOR: **Dr. S. Wiseman (NFER) & Miss R. Morton Williams (OPCS)**

LOCATION: National Foundation for Educational Research, The Mere, Upton Park, Slough, Bucks.
Telephone: Slough (75) 28161
and Office for Population Censuses & Surveys (until recently Government Social Survey), Atlantic House, Holborn Viaduct, London, E.C.1. **Telephone:** 01–583 8931

DURATION: 1967–1970 **AGE:** 5–16 **GRANT:** £22,000

AREA OF ENQUIRY

This is one of two projects arising from the Plowden Committee primary school samples. The main aim of the project was to attempt, by means of appropriate statistical analyses similar to those described in Appendix 4 of the Plowden Report, to explain in quantitative terms the extent to which factors in children's home background and early schooling exerted an influence on their later achievement. (For information on the other Plowden 'follow-up' project, see Effect of Environmental and Social Factors in Educational Attainment)

PROCEDURE

In 1964 information about parental attitudes, parental social and economic circumstances, and school factors were collected for approximately 3,000 pupils belonging to three separate age groups in the Primary School. The part that these factors played in explaining achievement in the primary school was reported in *Children and their Primary Schools* (The Plowden Report).

Four years later in 1968, as many as possible of the original sample were traced and once again information was collected by means of individual home interviews with parents, tests completed by pupils, and questionnaires administered to heads, teachers and pupils. All three age groups took a short reading test (the Watts-Vernon), a short mathematics test (the Vernon Graded Arithmetic/Mathematics test) and a non-verbal reasoning test (part of Heim's AH4). In addition information was collected on a variety of factors varying from parental attitudes and circumstances, through the qualifications of staff to school-parent interaction and pupils' behaviour as observed by the teachers. In all, complete records of data were obtained from 2,350 pupils who, in 1968, were in the fourth year of secondary school, the first year of secondary school and the last year of primary school.

PUBLICATION

The full report of the study is to be published by the NFER later in 1971.

RELEVANT PUBLICATIONS

Children and their Primary Schools: A report of the Central Advisory Council for Education (England) (The Plowden Report), HMSO, 1966, 2 vols.

FURTHER INFORMATION is available from Dr. Wiseman, or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London, W1N 6LL.

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EDUCATION OF TRAVELLING CHILDREN

DIRECTOR: **Mr. C. R. Reiss**

LOCATION: West Midlands College of Education, Gorway, Walsall, Staffs. **Telephone:** Walsall (0922) 29141

DURATION: 1970–1972 **AGE RANGE:** 5–16 **GRANT:** £5090

AREA OF ENQUIRY

The aims of the project are to help the teachers of travelling or gypsy children by providing information about the background, culture and educational needs of the various groups of travelling children, and about those approaches, methods of organization and teaching materials which have been found to be most successful in schools where there are already significant numbers of these children. The educational plight of travelling children has only recently been highlighted, although the problem was recognised during the last century. The Report of the Central Advisory Council for Education 1967 (the *Plowden Report)* named these children as "probably the most deprived group in the country".

"Travelling children" have been defined here as those children whose parents are leading a nomadic life in tents, shelters, caravans and other vehicles, and for the purposes of this project, those who have only recently settled. Besides gypsies, Romanies, didicois, Irish 'tinkers' etc., the survey may include the children of showmen, circus poeple and bargees. Under the implementation of the Caravan Sites Act Part 1, an increasing number of the 6,000–8,000 children of travelling parents will be able to attend schools as permanent sites are established.

PROCEDURE

Initially, the project is studying the travellers' culture and taking stock of the educational provision already being made. The director is also visiting a number of schools with experience of travelling children, and some account will also be taken of the various independent voluntary schools that have recently been established.

Very little is known about the performance, attainment, and even regularity of attendance of travelling children in schools, and it is hoped to collect information about these factors. Specific problems such as adaptation to school life, behavioural and socialisation difficulties, educational difficulties resulting from language and dialect, strengths and weaknesses in coping with the normal curriculum will be studied.

Methods which have proved successful in relating the parent to the life of the school and seem to have eased the children's transition into school life will be examined. Teaching methods which have built upon the travelling child's own special culture and aptitudes are likely to be of special interest. It is already known that the travelling community is far from being a homogeneous one and the specific characteristics and needs of the various constituent groups will be investigated.

FINAL PUBLICATION

It is hoped to produce a handbook for teachers containing background information and a survey of good practice.

FURTHER INFORMATION is available from the project director or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

Teachers with a special interest in the project might like to enquire of the project for information about a plan to accumulate individual childrens' – and family – case studies.

APRIL 1971

EFFECT OF ENVIROMENTAL AND SOCIAL FACTORS IN EDUCATIONAL ATTAINMENT

DIRECTOR: Mrs. M.E. Ainsworth
LOCATION: School of Education, The University, Manchester M13 9PL **Telephone:** Manchester (061)–273 3333

DURATION: 1966–1971 **AGE RANGE:** 7–16 **GRANT:** £23,000

AREA OF ENQUIRY

This is one of two projects arising from the Plowden Committee primary school samples. The project's brief was to follow up the 2,000 subjects of the Manchester Survey for the Plowden Report through their secondary school careers. The main object was to identify the features of secondary school environment which were associated with attainment. It was also hoped that individual 'improvers' and 'deteriorators' could be identified and that environmental correlations of these conditions could be described. It was expected that the project would need to make a close study of schools and homes.

(For information on the other Plowden 'follow-up' project, see Sample Survey of Parental Attitudes,).

PROCEDURE

For purposes of comparison the research design was similar to that followed for the original Plowden survey. Data for a school-based study have been collected from 53 secondary schools of all types, containing 1,544 pupils of the 2,000 in the original survey. From the original 186 pupils in the Plowden sample of individuals, 114 children in the same 53 schools were traced for a more intensive study of home background and pupils' attitudes to school.

Criteria measures for both analyses are scaled school examination marks in five subject areas – English, mathematics, sciences, social sciences and non-academic subjects – obtained in the first three years in the secondary school. A verbal general ability test constructed in the Faculty of Education at Manchester University was administered to 6,000 pupils in the 53 schools as an instrument against which to scale examination marks. Data were also collected on external examinations taken at the age of sixteen-plus and the age at which each sample pupil left school.

Predictors for the schools analysis have been obtained from questionnaires and interviews with head teachers and observational visits to the schools, for the school-based study. For the individual study data have been collected from pupils and from their parents by means of interviews.

From the analysis of the data it is hoped to suggest those aspects of home background and secondary school environment which relate most strongly with attainment and length of secondary schooling. Statistical findings will be supplemented by individual case studies.

PUBLICATION

A research report is in preparation and will be submitted to the Schools Council with a view to publication.

RELEVANT PUBLICATIONS

Children and their Primary Schools: A report of the Central Advisory Council for Education (England) (The Plowden Report), HMSO, 1966 2 vols.

FURTHER INFORMATION

Is available from the project director or from Mrs. Gillian Box, Schools Council, Information Centre, 160 Great Portland Street, London W1N 6LL.

COMMUNITY SERVICE: A LOCAL CURRICULUM PROJECT

DIRECTOR: Mr. T.R. Newell-Price

LOCATION: Berkshire College of Education, Bulmershe Court, Woodlands Avenue, Earley, Reading, RG6 1HY
Telephone: Reading (0734) 63387

DURATION: 1969–1970 **AGE RANGE:** 9–16 **GRANT:** £500

AREA OF ENQUIRY

Schools Council Working Paper 17: *Community service and the curriculum* drew attention to the educational work of community service by young people during their last few years at school. This project was intended as a one-year feasibility study with three main aims:

1. to study and compare a variety of approaches to community service and related community education in primary and secondary schools in order to establish aims and programmes which seem most relevant to the school curriculum. Particular attention was given to the 9–16 age range in order to suggest implications for the middle school
2. to produce a report on the year's work
3. to recommend what further initiative by the Schools Council might encourage appropriate developments in schools

PROCEDURE

Some forty schools representing a wide variety of areas in Berkshire, Buckinghamshire, Hampshire, Oxfordshire, Reading and Swindon participated in the project. These schools were asked, in the light of their experience, to suggest appropriate community service programmes, and also how and why they undertook community service with this age group. It was felt that community service had rich potential for the education of middle school children, but that it was usually only organised for sixth form enthusiasts in their spare time, or as a timetabled activity for pupils due to take a few CSE subjects or none at all.

Three conferences for participating teachers were organised during the year, reports and curriculum outlines were received from schools, and questionnaires provided by the Farmington Trust were used in a sample number of schools.

FINAL PUBLICATION

The Schools Council decided not to exercise its option to publish the project's report, but a copy is available for reference in the Schools Council Information Centre.

RELEVANT PUBLICATIONS

Schools Council *Community service and the curriculum* (Working Paper 17), HMSO, 1968, 20p.

FURTHER INFORMATION is available from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London, W1N 6LL.

YOUTH SERVICE AND THE SCHOOLS

DIRECTOR: Professor A.G. Joselin **RESEARCH OFFICER:** Lady Ethel Venables

LOCATION: Department of Education, University of Aston, Gosta Green, Birmingham 4.

DURATION: 1968–69 **AGE RANGE:** 14+ **GRANT:** £4,500

AREA OF ENQUIRY

This one year study was established at the instigation of the Youth Service Development Council to obtain factual information:

1. about the relationships, similarities and differences between the roles of teachers and youth leaders
2. about the relationships between schools, further education and the community
3. to produce examples of working relationships at the school leaving age between the youth service and the schools

The research has been limited to a study of teachers and youth workers in Birmingham.

PROCEDURE

Teachers and youth workers in Birmingham were invited to participate in the research and about 200 attended three meetings. During these meetings they were asked to complete two questionnaires – one on role concepts and role expectations, i.e. how the two roles (youth worker and teacher) are perceived and the other involving a consideration of role identities and the *ideal* roles of the two groups.

As a result of these preliminary discussions, 122 of the original 200 returned on subsequent occasions for testing sessions lasting two to three hours. A number of inventories, questionnaires and self-relating scales were used in order to determine what sort of people the subjects were, with regard to their interests, personality, social attitudes etc.

Further to this, some 20 youth workers and 26 teachers met in four groups for six 90-minute discussion sessions, covering such topics as the actual and ideal role for each group; role pressures; the relationship between youth work and the schools. Finally, six schools were visited during the year and heads, school counsellors, youth workers administrators, college lecturers and research workers were interviewed.

FINAL PUBLICATION

A research report has been published as *Teachers and Youth Workers : a study of their roles*, Schools Council Working Paper 32. In addition to details of procedure, an analysis of the results of the interviews, group discussions and questionnaires, and a long appendix with excerpts from the tape-recorded discussions, the report considers three central questions for the future: what have teachers and youth workers themselves to offer towards the clarification of their two roles? If teachers and youth workers are seen to serve two separate functions, does this mean that the two jobs call for two different kinds of people in terms of personality and attitudes? what in this research is relevant to the planning and future development of relationships between the two services?

RELEVANT PUBLICATIONS

Schools Council, *Teachers and youth workers: a study of their roles,* (Working Paper 32), Evans/Methuen Educational 1971, 57p.

Schools Council, *Co-operation between the Youth Service and Schools,* (Pamphlet 8), 1971. Free from the Schools Council. Reports from the Council's Field Officers on examples of current practice.

FURTHER INFORMATION is available from Mrs. Gillian Box Schools Council Information Centre 160 Great Portland Street, London W1N 6LL.

FACTORS IN SCHOOL ORGANISATION WHICH INFLUENCE PUPIL INVOLVEMENT

DIRECTORS: Professor R. Pedley (Exeter) and Professor W. Taylor (Bristol)

RESEARCH FELLOW: Dr. R.A.King

LOCATION: Institute of Education, University of Exeter, Gandy Street Exeter **Telephone:** Exeter (0392) 77911

DURATION: 1967–70 **AGE RANGE:** 11–18 **GRANT:** £15,000

AREA OF ENQUIRY

The research set out to answer three broad questions:

1. How do schools organise the behaviour and learning activities of their pupils? What are the differences in organisation between types of school, and how may they be explained?
2. To what extent are pupils involved in the school? What differences are found in the levels and types of involvement of pupils of different ages, sex, ability and social background, and how may they be explained?
3. To what extent and in what ways is the pupil's involvement in the school related to the internal organisation of the school?

PROCEDURE

The basic research design follows from the three questions

The Measurement of the Organisation of Schools

The organisation of 72 schools from seven LEAs, representative of the national distribution of schools by size, sex composition and status, were investigated using questionnaires, documents, interviews and direct observations. The organisation of all the major pupil activities of the school was investigated and measured. These activities included the school assembly, school uniform, rewards and punishments, the house system and pastoral care, games and out of school activities, learning groups, careers advice, the prefectorial system and school councils.

The results indicate that the organisation of the school reflects the kind of pupils who go to it; their ability, social background, sex and age-range. In addition the school's philosophy, or ideology, can influence the organisation and this is particularly true of comprehensive schools. The size of the school is a relatively unimportant factor influencing the organisation of the pupils, and is only strongly associated with differences in the provision of pastoral care, which is more highly organised in large schools.

The Measurement of Pupil Involvement

7,500 pupils of different ages, sex, and ability, were surveyed from a sub-sample of 30 schools. Their involvement in the school was measured using a number of specially constructed scales and also by the incidence of their joining school clubs. playing in school teams and holding official positions.

The pupils' involvement in the school was related to their age, sex and social background. Their ability was relatively unimportant. The most interesting differences are those between the sexes. For example, in almost all mixed schools, girls showed higher levels of acceptance and satisfaction with the school assembly and school uniform than boys.

School Organisation and Pupil Involvement

For the most part the organisation of the school does not appear to be a strong influence on the pupils' involvement in the activities of the school. For example, no matter what the school's policy was concerning school uniform, boys in mixed schools were almost always less favourably disposed towards the wearing of it than girls. Similarly, the degree to which the school uniform was prescribed did not relate to the pupils' feelings about wearing it. Although the pupil's involvement was sometimes related to his stream, it was not always the case that the top stream pupils were more involved than those in lower streams.

PUBLICATION

It is hoped that a detailed research report will be published in 1972, and that a shorter summary of the main findings will also be published.

FURTHER INFORMATION is available from Dr. King at the project or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

CHANGE AND INNOVATION IN AN EXPANDING COMPREHENSIVE SCHOOL

DIRECTOR: **Miss Elizabeth Richardson**

LOCATION : School of Education, University of Bristol, Helen Wodehouse Building, 35 Berkeley Sq. Bristol B58 1JA
Telephone: Bristol (0272) – 24161

DURATION: 1968–1971 **AGE RANGE:** 11–18 **GRANT:** £3,675

AREA OF ENQUIRY

The project was planned as a result of the work which led to Miss Richardson's two books – *Group Study for Teachers* and *The Environment of Learning* – and is a study of the process by which the management and consultative structure of an expanding secondary school, and its academic and pastoral care organisation, change with a rapid increase in size and with decisions to implement major curriculum innovations.

It was hoped to learn something of:

1. the nature of authority and leadership in the school community
2. the stresses under which teachers and pupils at different levels of the organisational structure have to work in carrying out their tasks
3. the roles taken, both consciously and unconsciously, by different individuals and groups in the school
4. the difficulties encountered in implementing change – e.g. in introducing the curriculum, in reorganising the system of management within the institution

PROCEDURE

The study has been based on a school in Somerset which opened in 1959 with a three form grammar school entry, and as a result of reorganisation was joined in 1966 by a comprehensive intake. There are now over 1,100 pupils.

Since September 1968, Miss Richardson has been acting as a consultant to the headmaster and staff in a situation where innovations were already being proposed, discussed and implemented before Miss Richardson's arrival.

As the research has progressed, it has become increasingly involved with problems of authority at various levels. As a result of a larger and different kind of pupil intake and a wider ability range, a new system has had to be imposed upon an existing school, and this has brought implications for relationships within the school for changing roles and for modifying the structure of the school.

FINAL PUBLICATION

A detailed record of the two year's work has been made and discussed with the staff. A report is currently being prepared in consultation with the staff.

RELEVANT PUBLICATIONS

Elizabeth Richardson, *Group Study for Teachers,* Routledge, 1967.
Elizabeth Richardson, *The Environment of Learning,* Nelson, 1967.
Elizabeth Richardson, 'The Staff Group and its problems of authority and shared responsibility, *the new era,* Vol 50, No 10, December 1969.

FURTHER INFORMATION is available from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

RESOURCE CENTRES

DIRECTOR Mr. D. J. Foskett **RESEARCH OFFICER:** Mr. N. Beswick

LOCATION: Institute of Education Library, University of London, 11–13 Ridgmount Street London, W.1
Telephone: 01–637 0846

DURATION: 1970–1973 **AGE RANGE:** 11–18 **GRANT:** £18,000 (+ £3,000 from NCET).

AREA OF ENQUIRY

The proposal for this research project had its origin in the work of three of the Council's curriculum development projects: General Studies (q.v.), Keele Integrated Studies (q.v.) and Humanities Curriculum Project (q.v.). The learning methods advocated by these projects and the materials that they have been producing require the development of new methods and facilities for the storage of learning resources in school and for their retrieval and use. A great many schools and colleges had also been facing the problem of storing and retrieving multi-media materials.

The project was thus established to identify the various problems which face schools and authorities wishing to develop resource centres, and to determine what have so far been found to be the most suitable and practicable methods of solving them. Problems are also being considered for which no satisfactory solutions have yet been found, and special attention is being paid to systems of indexing, storage and retrieval.

The word 'resource' is here used to mean anything that may serve as an object of study by pupils and includes books, pictures, sound recordings, exhibits and specimens, maps, tables, duplicated sheets, pamphlets, press cuttings, films, film loops, transparencies and programmed texts. It may also include guides to study, such as work sheets and reading lists. The term resource centre is used to mean an indexed collection of resources equipped with a storage and retrieval system. Such a centre would normally include a library or be part of a library, and might be linked to or include reprographic and audio-visual facilities.

PROCEDURE

During the first year the research officer is making a study of work in this field in this country and the USA. He is visiting schools, colleges of education and teachers centres in this country where exploratory work is being undertaken, and drawing upon the experience gained during a 14 month period teaching in a library-school in America prior to the start of the project. He is also making contact with LEA audio-visual-aids organisers, schools library services in country libraries etc. A special study of methods of storage, indexing and retrieval is being made.

During the second and third years six schools and a teachers centre, already actively interested in resource collections, will be invited to co-operate in an experimental scheme to test and demonstrate different kinds of resource organisation and indexing. In each case, the retrieval needs of the school/centre will be discussed in relation to the curriculum, the organisational pattern and the school's philosophy; a suitable indexing system will be devised which can be operated by the present staff of the school; as much as possible of the archive collection will be suitably and quickly indexed; and the effectiveness of the system will be studied in relation to the subsequent demands made upon it by teachers and pupils.

PUBLICATION

An interim report will be submitted to the Schools Council at the end of 1971. This will deal with different patterns of organisation of resources, classification, indexing, and retrieval, and it is hoped it will give specific recommendations on the physical problems of storage.

RELEVANT PAPERS AND PUBLICATIONS

N. Beswick, 'The Certain Standards in Context: A study of the American School Library Materials Centre concept'. *Journal of Librarianship,* Vol. 2, No. 3 July 1970.
N. Beswick, 'The multi-media library in some American schools'. *Education Libraries Bulletin,* Winter 1970.
N. Beswick, Review of Library Association's 'School Library resource centres: recommended standards' in *Education Libraries Bulletin,* Spring 1971.

A list of schools where resource centre work is in operation is available from the project.

FURTHER INFORMATION is available from Mr. Beswick, or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

TEAM TEACHING IN INTEGRATED STUDIES

DIRECTOR: **Professor Wilson, Institute of Education, University of Bristol**

PROJECT CO-ORDINATOR: **Miss P.M. Logan**

LOCATION: Henbury Comprehensive School, Marissal Road, Bristol **Telephone:** 0272 62–2891

DURATION: 1971–1972 **AGE RANGE:** 11–13 **GRANT:** £5,250 (+ £2,500 from Bristol LEA)

AREA OF ENQUIRY

For the past four years a team of sixteen teachers at Henbury School has been doing integrated studies in history, geography and religious education in up to twenty mixed ability groups in the first two years of school. The work has been planned by the whole team and about one fifth of the teaching time has been devoted to lead lessons for all pupils; the rest of the time has been spent in follow-up teaching groups. During the four terms of this project one team member will be withdrawn from teaching duties to prepare a report on the ideas and methods developed by the team and to develop further the integrating concepts and methods used.

PREVIOUS WORK

The aim of the team has been to create in the pupils a lively awareness of their total environment. This has been done by retaining the fundamental concepts of the separate disciplines but presenting them without the isolating constraints of subject barriers. The team has emphasised the need for pupils to take some responsibility for their own learning, and has attempted to build a degree of flexibility into the programme so that it is suitable for the individual needs of all pupils. To this end there has been much encouragement of co-operative work in small groups.

FINAL REPORT

The report will be concerned with:

1. A discussion of integrated studies work showing how pupils learn through this approach, how the separate disciplines contribute to the whole, and the degrees of success achieved with the various methods and materials used

2. The ways of ensuring co-operative development through a *team* of teachers and the implications these have for school organisation

3. The development of a small school resources centre, with particular reference to the type of material which can be produced internally

FURTHER INFORMATION is available from Miss Logan at Henbury School, or from Mrs. Gillian Box Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

APRIL 1971

PLANNING OF COURSES

DIRECTOR: **Professor P.H.Taylor**

LOCATION: School of Education, University of Birmingham, P.O. Box 363, Birmingham 15
Telephone: Birmingham (021)–472 1301

DURATION: 1967–1969 **AGE RANGE:** 13–16 **GRANT:** £2,835

AREA OF ENQUIRY

This small-scale enquiry was established in 1967 to explore the terms in which teachers thought about curriculum planning, what criteria of construction they employed, how frequently they were involved in planning and with whom, and to illuminate how they perceived the elements of curriculum planning to be related.

PROCEDURE

The studies were carried out in two local authority areas, a large city authority and a part-rural part-urban area over a two year period. They concentrated on secondary schools concerned with pupils of average and below average ability and were confined to three subject areas – English, science and geography.

Five techniques were used –
a) open and undirected discussion with two separate groups of teachers in each of the three subject areas. (Eight teachers were nominated by each LEA in each subject area).
b) an analysis of syllabuses used in the three subjects in relevant types of school.
c) a rating scale aimed to discover how teachers put together their ideas about planning and what emphasis they give to different parts of the process.
d) a questionnaire for teachers based on (a) and (b).
e) a questionnaire on pupil perception of course objectives.

Points that emerged from the analysis of data collected include the prominence of the pupil, and his needs, abilities and interests as a factor in planning; the teacher's concern with subject matter, aims and to a lesser extent teching methods; the emergence of evaluation as the concept in planning which teachers seem least to value or implement; teachers' lack of concern with the relation between their subjects and other subjects and to the curriculum as a whole. On the whole, many teachers seemed to have a rather unsystematic approach to planning.

PUBLICATION

A report of the research was published by the National Foundation for Educational Research entitled *How teachers plan their courses* by Philip H. Taylor, 1970, £1.50.

FURTHER INFORMATION is available from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London, W1N 6LL.

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CSE MONITORING PROCEDURES

DIRECTOR: **Dr. L.S. Skurnik**

LOCATIONS: National Foundation for Educational Research, The Mere, Upton Park, Slough, Bucks.
Telephone: Slough (75) 28161

DURATION: 1964 – 1969 **AGE RANGE:** 14–16 **GRANT** £133,556

AREA OF ENQUIRY

In England and Wales, the assessment of attainment at the age of 16 is divided between two systems of examinations: the Certificate of Secondary Education (CSE) and the ordinary level of the General Certificate of Education (GCE). There are 14 Boards offering examinations for the CSE and eight for the GCE.

Subject by subject there is a great variety of alternative syllabuses and of techniques of examining. There are also three *modes* of CSE – Mode 1: external syllabuses and papers set and marked by the examinations boards; Mode 2: similar examinations conducted on syllabuses proposed by individual schools or groups of schools; Mode 3: examinations set and marked by schools themselves, subject to the moderation of standards by the examining boards.

Since 1965 when the first nine boards started their operations, it has been the responsibility of the Schools Council to ensure comparability of grading standards among the fourteen boards. In addition since CSE grade 1 was defined to be comparable to an O-level pass, comparability between the CSE boards and the eight GCE boards was of concern.

Thus in 1964, the Schools Council commissioned the Examinations and Tests Research Unit of the NFER to investigate the degree of comparability in grading standards among the CSE boards and between the CSE and GCE boards. The CSE boards' actual results, collectively and individually, were also to be related to the guidance of standards given in the seventh report of the former Secondary School Examinations Council, *Scope and Standards of the CSE.*

PROCEDURE

The main method, adopted in four consecutive years involved the use of a general scholastic aptitude test which was administered to CSE and GCE O-level candidates in a sample of schools in each of the boards' areas shortly before the examination. This reference test was used as a common yardstick against which the grading standards of the different boards were assessed. The use of this particular experimental design, as opposed to attainment tests, cross-moderation or item-banking, is discussed in the reports of the four years' experiments

SUMMARY OF RESEARCH RESULTS

Details of the published reports are given in the following section.

1965. As only nine of the fourteen boards had begun operations, no final conclusions could be drawn.

1966. Two boards were seen to be consistently out of line with their peers in their grading standards, one on the side of severity, the other of lenity. This pattern was seen in all six subjects monitored (English, mathematics, geography, history, French and science) and was confirmed in English and mathematics using attainment tests as additional monitoring instruments, and again in English by a cross-marking experiment. In general, however, it appeared that the majority of boards were awarding grades of a common standard and that the CSE grade 1/GCE O-level pass overlap was about right.

1967. The overall standards had remained much the same as in 1966, and there was growing agreement among the boards about their mean grade standards.

1968. In the light of the previous studies, only in four cases out of seventy considered, did the mean grade standards appear to be too lenient. There were no cases of marked severity. A review of the trend of the mean grade standard of all boards over the period 1966–1968 indicated that there may be a slight but significant trend towards lenity in English, geography and French. Evidence also suggested that the CSE boards overall awarded a grade 1 to about the correct proportion in comparison with the pass standard at GCE O-level. A further study using two attainment tests in two pairs of boards convincingly validated the results of the main aptitude test study at both the mean grade and grade 1 levels.

RELEVANT PUBLICATIONS

Scope and standard of the Certificate of Secondary Education, 7th report of the Secondary School Examinations Council HMSO, 1963, 10p.

Schools Council *The 1965 CSE Monitoring Experiment,* (Working Paper 6 Parts 1 and 2), HMSO, 1966. 45p.

L. S. Skurnik and J. Hall, *The 1966 CSE Monitoring Experiment,* (Schools Council Working Paper 21), HMSO, 1969 42½p

L. S. Skurnik and I.M. Connaughton, *The 1967 CSE Monitoring Experiment* (Schools Council Working Paper 30), Evans/Methuen Educational 1970, 21p.

D. L. Nuttall *The 1968 CSE Monitoring Experiment,* (Schools Council Working Paper 34), Evans/Methuen Educational, 1971, 42p.

FURTHER INFORMATION

These publications are all available for reference by appointment with Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

GROUP RESEARCH IN TECHNIQUES OF EXAMINING FOR USE IN CSE EXAMINATIONS

DIRECTOR: Dr. W.G.A.Rudd

LOCATION: School of Education, The University, Manchester M13 9PL **Telephone:** Manchester (061)-273 3333.

DURATION: 1964–1968 (Schools Council support from 1965) **AGE RANGE:** 14–16 **GRANT:** £1750 (+ £750 from DES, £250 from ALSEB, £750 from NWSSEB)

AREA OF ENQUIRY

The project was initiated by the University of Manchester School of Education, following a similar exercise with GCE O-level. Based upon a belief that a secondary school examination which aims to avoid harmful backwash effects upon teaching should, as far as possible, develop from the experience of outstanding secondary school teachers, an exercise in group research and development was established. Five teams, each of about twenty-five members including two-thirds practising teachers, were set up in the subject areas English, French, mathematics, music and art.

A report of the project was published as Schools Council Examinations Bulletin 20: *CSE: a group study approach to research and development* and a summary of its findings are as follows:–

English. As an aid to identifying abilities being assessed through its tests of oral and written expression, the English panel administered a battery of forty-four reference tests. Evidence from these suggested that skill in oral expression is sufficiently different from skill in written expression to merit separate assessment in an achievement examination. Also interesting was the finding that oral tests yield a better prediction of originality than do written expression tests.

French. Emphasising the desirability of testing one language skill at a time, the French panel concluded that reliability of oral examining may be improved through use of detailed, analytical marking schemes and of standardised sample recordings of tests, and by training teachers as examiners. This report also describes an entirely objective test of aural comprehension, one which has no visual elements and which eliminates self-expression.

Art. Using a combination of objective, essay and graphical items, and dealing with topics ranging from chairs and shop fronts to pictures and sculpture, the art panel devised and tried out a three-hour test of appreciation which genuinely interested pupils and revealed in some of them a highly-developed sensitivity towards aesthetic problems. This panel also researched into problems arising when groups of examiners mark exhibitions of pupils' work, using general impression methods.

Mathematics. The mathematics panel set out to devise an examination which would provide opportunities for candidates to display all the imagination, intuition, judgement and reasoning power which liberal teaching would foster. Its experimental evidence favours some combination of objective and conventional-type questions for CSE examinations. Although no sex differences in mean scores for general ability were found for the sample of pupils tested, boys gained a significantly higher mean score than did girls in the experimental tests of mathematics. Mean scores for pupils from co-educational schools were significantly higher than were those for pupils from single-sex schools.

Music. The music panel aimed to encourage practical music making even when the pressures of examinations exert themselves most powerfully. Its experiments suggest that corporate music making does lend itself to individual testing, even when schools are given freedom both in the selection of music and in the composition of ensembles. This panel's report also includes details of experimental tests of appreciation and of musical experience. An analysis of test results shows a strong link between achievement and interest in music, even where pupils' general ability and social status are not high.

The Examinations Bulletin includes discussion of the side effects of teachers researching with other educationists, and appends lists of participating teachers and schools, and copies of the tests used by the subject panels.

RELEVANT PAPERS AND PUBLICATIONS

The Certificate of Secondary Education: some suggestions for Teachers and Examiners (Examinations Bulletin 1), HMSO, 1963. 50p.

Schools Council *CSE: A group study approach to research and development.* (Examinations Bulletin 20), Evans/Methuen Educational, 1970. £1.58.

FURTHER INFORMATION is available from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

ITEM BANK PROJECT

DIRECTORS: **Mr. R. Wood and Dr. L.S. Skurnik**

LOCATION: National Foundation for Educational Research, The Mere, Upton Park, Slough, Bucks.
Telephone: Slough (75) 28161

DURATION: 1966–1968 **AGE RANGE:** 14–16 **GRANT:** £10,500

AREA OF ENQUIRY

In July 1966, the Schools Council asked the National Foundation for Educational Research to carry out a pilot study into the feasibility of establishing Banks or Libraries of examination questions or items suitable for measuring the achievements of 16 year-olds taking CSE examinations.

The objectives of item banking can be summarised as follows:

1. To provide examiners with more objective information about the characteristics of the examinations they are using, and thereby improve the chances of securing comparability of standards, between and within CSE regional boards.
2. To build up libraries of first-class examination questions or items which can be put at the disposal of examinations boards and teachers wishing to set school-based examinations.
3. To familiarize more teachers with the ideas of modern examining, particularly the notion that an examination should be devised on the basis of a blueprint, a document which codifies in detail the student attributes or behaviours which the examiner wishes to evaluate and also the subject matter which is thought conducive to the achievement of these objectives.
4. To develop classifications of achievement which are universally applicable so that teachers become more aware of what it is they are testing and why, and also so that CSE grades can be made to have more substance and meaning.
5. To detect and train item-writing talent so that item banks may be stocked with items of the best quality.

PROCEDURE

Eight (later six) schools from the southern sub-section of the East Anglian CSE region participated in the project. Initially the mathematics teachers in these schools were asked to write specifications or blueprints for a CSE examination: these blueprints were amalgamated into a composite version, sufficient items were collected for this and the items were tested on a sample of CSE candidates. Items surviving the testing and a final pruning, were sent to the original teachers with the request that they should choose a purpose-built test of 40 items to serve as a short alternative CSE examination, and administer this to their CSE candidates.

From the results of these tests a relationship between scores and CSE grades was derived. Thus anyone drawing a test from the bank could be told the sequence of mean scores on the test which the candidates he allocates to certain grades should obtain, in order that the grades he awards should be nationally comparable.

FINAL PUBLICATION

A full report on this experiment was published as *Item Banking,* R. Wood and L. S. Skurnik, N.F.E.R.
A shorter, more 'popular' version of the report entitled *Question Banks* will be published as Schools Council Examinations Bulletin 22.

RELEVANT PUBLICATIONS

R. Wood and L.S. Skurnik, *Item Banking,* NFER, 1969, 45/–
Schools Council *Question Banks: their use in school examinations* (Examination Bulletin 22) Evans/Methuen Educational, 1971, 22p.

FURTHER INFORMATION from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

CSE CROSS MODERATION EXERCISE IN COMMERCE, HISTORY, TECHNICAL DRAWING AND MATHEMATICS

DIRECTOR: Mr. P. Lawrence

LOCATION: Associated Lancashire Schools Examining Board, 77 Whitworth Street, Manchester 1.
Telephone: Manchester (061)–273 6020

DURATION: 1967–68 **AGE RANGE:** 14–16 **GRANT:** £1092

AREA OF ENQUIRY

An enquiry into standards in CSE Mode 1 examinations in commerce, history, mathematics and technical drawing undertaken jointly by the Associated Lancashire, North Regional, North Western and Yorkshire Regional Examination Boards. Each of the four boards adopts different methods for grading candidates' performances, and the object of the exercise was to discover the extent to which, subject by subject, different boards agree or disagree on the standards appropriate to the various grades of examination.

PROCEDURE

80 scripts covering the full range of grades and including ungraded, were selected from each board and sent in turn to the Chief Examiners of all the boards. When grading was completed the Chief Examiner was then asked to compare his marking with that of the original board. The results showed that on the whole there was a large measure of agreement amongst the assessors, and very often disagreement could be traced in part to differences in aim and method. The greatest measure of disagreement was in technical drawing and the Associated Lancashire Schools Examining Board subsequently initiated a further enquiry in this area involving 11 CSE and 2 GCE boards.

RELEVANT PUBLICATIONS AND PAPERS

CSE An enquiry into standards in four subjects by four boards, 1968.
A report of the exercise available free of charge from any of the participating Boards.

Technical Drawing: a further enquiry into standards
Available free of charge from the Associated Lancashire Schools Examining Board.

FURTHER INFORMATION is available from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

CSE CROSS MODERATION EXERCISE IN ENGLISH, MATHEMATICS, PHYSICS AND HISTORY

DIRECTOR: Mr. D.H.Board

LOCATION: Metropolitan Regional Examinations Board, 23–4 Henrietta Street, London WC2
Telephone: 01–240 1814

DURATION: 1967–1968 **AGE RANGE:** 14–16 **GRANT:** £1,200

AREA OF ENQUIRY

An enquiry into standards in CSE Mode 1 examinations in English, mathematics, physics and history undertaken jointly by the Metropolitan, Middlesex, South-East and East Anglian Examination Boards. It was hoped that the value of the exercise would lie in the increased awareness by each examiner of the standards of his own Board as compared with those of the other three Boards.

PROCEDURE

90 sample scripts from the four Boards covering the complete range of performance, were circulated to each Board. When each Board had assessed the other Boards' scripts, the mean categorisation was then compared with the original markings.

FINAL REPORT

A report on the history cross-moderation exercise is available from Mr.D.H.Board. The main conclusions of the exercise were mainly negative. There were random variations in assessment between the Boards, but this seemed due on the whole to differing aims on the part of the assessors and/or to different views of the type of question set by other Boards.

There was little discernible difference in standards of assessment. It was concluded that further exercises of this nature should use fewer scripts, and some effort should be made to ensure that all assessors were in agreement on their aims and the kind of answers for which they are looking.

FURTHER INFORMATION is available from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

CSE CROSS MODERATION EXERCISE IN GEOGRAPHY

DIRECTOR: **Mr. D.C.Spencer**

LOCATION: Southern Regional Examinations Board, 53 London Road, Southampton, SO9 4YL
Telephone: Southampton (0703) 27061

DURATION: 1969–1970 **AGE RANGE:** 14–16 **GRANT:** £1,300

AREA OF ENQUIRY

An enquiry into standards in CSE Mode 1 examinations in georgraphy organised by the Southern Regional Examinations Board and involving the participation of the North Regional Examinations Board, South East Regional Examinations Board, and South Western Examinations Board. The exercise has investigated a) the extent to which within the Southern Regional Examinations Board the objectives in Geography are the same and the extent to which these objectives are similar to those adopted by other boards; b) the relevance of the use of marking schemes; c) the extent to which schools' initial assessment of CSE grades prior to examination are the basis of grading to be confirmed or adjusted by consortia, schools or the Board after examination.

PROCEDURE

30 Southern Regional Examinations Board scripts were marked, without marking schemes, by twelve members from each of the three participating Boards. Individual assessment was also made of course work etc. and collective assessments made by the three Boards. The results of all these assessments were compared.

FINAL PUBLICATION

A report is being prepared by the Southern Regional Examinations Board.

FURTHER INFORMATION is available from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

CSE CROSS MODERATION EXERCISE IN ENGLISH AND RELIGIOUS EDUCATION

DIRECTOR: Mr.G.Flack

LOCATION: West Midlands Examinations Board, Norfolk House, Smallbrook Ringway, Birmingham 5.
Telephone: Birmingham (021)–643 8924

DURATION: 1969–1970 **AGE RANGE:** 14–16 **GRANT** : £625

AREA OF ENQUIRY

An enquiry into Grade 4 standards in CSE examinations in English and religious education, conducted by the West Midlands Examinations Board in association with seven other boards in the case of English, and eleven other boards in religious education. An attempt was made to measure the extent of agreement between individual teachers about the upper and lower limits of the Grade 4 band, by asking them to use gradings to describe the levels of performance within this area.

PROCEDURE

30 scripts per subject drawn from the West Midlands Board's 1969 examinations were circulated to representatives of the various boards who were asked to grade the scripts and place them in order of merit. The results of these markings were then compared and analysed. Sets of scripts have also formed the basis of local assessment trials designed to develop the confidence of teachers in recognising national standards and applying them.

FINAL REPORT

A report is currently being prepared and should be available in June 1971.

FURTHER INFORMATION is available from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

CSE: A FILM ON THE CERTIFICATE OF SECONDARY EDUCATION

SHOT DURING: 1969/70. **AGE RANGE:** 14–16+ **GRANT:** £370 (+ £370 from the East Midland Regional Examining Board)

The film is designed principally for an audience of parents, employers and schools, and emphasises the teachers' control of the examination, the part played by course work and an interpretation of grades.

FILM DETAILS

The film was commissioned by the East Midland Regional Examining Board with a contribution of £370 from the Schools Council, and was made by an industrial film production unit in Nottingham.

It is in 16mm. black and white and runs for 20 minutes.

Copies of the film are available on loan, free of charge, from the East Midland Regional Examinations Board, Robins Wood House, Robins Wood Road, Aspley, Nottingham. (Telephone: Nottingham (0602) 293291).

The film may be seen at the Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL, by arrangement with Mrs. Gillian Box. *This copy may not be loaned.*

PREDICTIVE VALUE OF CSE GRADES FOR FURTHER EDUCATION

DIRECTOR: **Mr. I.C. Williams**

PROJECT DIRECTOR: **Mr. N.C. Boreham (now Research Officer, East Anglian Examinations Board)**

LOCATION: Thurrock Technical College, Woodview, Grays, Essex.

DURATION: 1969–1971 **AGE RANGE:** 14–16+ **GRANT:** £3,220

AREA OF ENQUIRY

The purpose of this research project is to investigate the value placed on CSE Grades 2, 3 and 4 by colleges of further education in relation to the entrance qualifications for courses not requiring GCE O-level, or CSE Grade I.

PROCEDURE

The progress has been recorded of 500 students at colleges of further education who enrolled for courses not requiring GCE O-level or CSE Grade I as entrance qualifications in a variety of courses, e.g. engineering crafts, pre-hairdressing, catering, secretarial etc. The records of entrance qualifications for students enrolling for one and/or two year courses in 1967 and 1968 have been compared with the achievements in their vocationally-biased course examinations. A report has been prepared which includes evidence on the predictive values of CSE grades below grade one.

FINAL PUBLICATION

A report has been prepared for submission to the Schools Council, with a view to publication.

FURTHER INFORMATION is available from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL

100 R

EXPERIMENTAL SCHEME OF SCHOOL ASSESSMENT IN ENGLISH LANGUAGE (ORDINARY LEVEL)

PROJECT SUPERVISOR: **Mr. E.A.Hewitt, Durham University**

DIRECTOR: **Mr. G.M.Forrest**

LOCATION: Research Unit, Joint Matriculation Board, Manchester M15 6EU **Telephone:** Manchester (061)–273 2565

DURATION: 1964–1971 (Schools Council support since 1968) **AGE:** 14 – 16 **GRANT:** £4,618 (+ £5,000 from the DES)

AREA OF ENQUIRY

In December 1963, the Ministry of Education granted £5,000 over a period of three years in support of two research projects relating to the examining of English language at Ordinary level: one on the reliability of the present form of O-level English examinations, and one on the assessment of English at O-level. The first of these projects, covering the exams of 1965, 1966 and 1967, was completed in 1967 and a report by E.A. Hewitt entitled *The Reliability of GCE O-level examinations in English language* was published by the JMB in 1967.

The second of these was extended, with financial support from the Schools Council, to include the exams of 1968, 1969 and 1970. The main objective of the research is to evolve a method or methods by which the school will assess the ability of its pupils to write and understand English; on the basis of the school's assessments the examining board issues a GCE certificate.

PROCEDURE

Although 'Mode 3' examining, (in which syllabus and question papers are devised by the staff of an individual school and the papers are assessed by the teachers) has always been a feature of GCE examining, this experimental scheme, based on externally moderated school assessments of written work done in the final year of the Ordinary level course, is one of the first to be undertaken by a GCE Board. Candidates are assessed on continuous written work on assignments set by teachers throughout the year; these assignments arise directly from teaching, reading, classwork and discussion. At the end of the year, each candidate is assessed by his own teacher on the standard he has reached by the end of the course. Formal examinations play no part in deciding the grades to be awarded. In order to establish comparability between schools, teachers involved in the experiment meet during the year to discuss trial markings. Selected samples of work for 25 candidates from each school are sent to a teacher from another school who acts as moderator. The work of candidates who are on the pass/fail borderline is submitted to a second moderator who also deals with any disagreements between school and first moderator.

The number of candidates taking part in this experimental scheme has risen from 479 (10 schools) in 1965 to 2,557 (34 schools) in 1969, the majority of these being in the West Riding of Yorkshire. In 1970 the scheme was extended to include other schools in the north-east; and in Manchester, Liverpool and Birmingham the number of candidates to be assessed in this way in 1971 is estimated to be 6,050. The pass rate has varied between 91% in 1969 and 94% in 1967.

REPORTS

Three interim reports have been published:

E.A.Hewitt and D.I.Gordon, *English Language: an experiment in school assessing* (first interim report). Joint Matriculation Board, 1965.

J.A.Petch, *English Language: an experiment in assessing* (second interim report). Joint Matriculation Board 1967.

An experimental scheme of school assessment in Ordinary level English language (third report). Joint Matriculation Board 1970.

All these are available on request from the JMB.

A final report will be published during 1971, by which time a decision will have been taken as to whether or not to offer this scheme to all schools wishing to take advantage of it.

RELEVANT PAPERS

Anthony J. Pike, 'The Assessment of English Language for O-level', *The Use of English,* Vol.22, No.3, Spring 1971.

FURTHER INFORMATION is available from Mr. Forrest, or from Mrs. Gillian Box. Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

STANDARDISED BATTERY OF TESTS OF BASIC PROFICIENCY IN FRENCH

DIRECTOR: Mr. T.S. Percival **RESEARCH ASSOCIATE:** Mr. A.E. Henshaw

LOCATION: Department of Education, University of Manchester, Manchester M13 9PL.
Telephone: Manchester (061)–273 3333

DURATION: 1970–1972 **AGE RANGE:** 14–16 **GRANT:** £5,000

AREA OF ENQUIRY

This two year project has been established to develop a battery of French tests suitable for assessing basic proficiency in listening, speaking, reading, and writing. The battery will be standardised on a sample of pupils preparing for GCE and CSE, in their fourth year of study in secondary schools. It is intended that the tests should be for internal use in schools or other establishments, by teachers and learners of the language.

The tests are intended to provide:

1. a measure for use in teaching and research.
2. a means of constructing a pupil's profile of proficiency in the four skills by use of a nine point scale.
3. a point of reference for teachers by the development of norms based on a defined population.
4. a measure of overlap between GCE and CSE.
5. objective evidence of proficiency which might be useful, for example, to teachers in discussion with pupils and parents.

The test materials will be based mainly on the principles of frequency and utility as established by the findings of the Centre de Recherche et d'Etude pour la Diffusion du Francais (CREDIF).

PROCEDURE

The project director has been concerned with the construction of standardised tests over a period of twenty years, and a pilot experiment with some 1,000 pupils in the Manchester area was undertaken before the project officially started. This involved the construction and small scale standardising of a French listening test, developed for use in a classroom, in a language laboratory, or by a student working on his own. The construction of four tests is planned:

Listening Test. About 50 items, including taped questions, remarks, extracts from conversations, with multiple choice printed and picture responses.

Reading Test 50–60 items, including single sentences and extracts, and making use of multiple choice and matching techniques.

Writing Test. The test is likely to consist of a closely controlled first part, using completion techniques, with a second part for freer response.

Speaking Test. Tests in pronunciation, questions on pictures, and a series of pictures as a basis for pupils to talk. The possibility of constructing the test entirely on tape will be explored, so that it may be self-administered.

It is intended that each test should be suitable for administration within a normal school period. Objective techniques will be used as far as proves practicable, and final choice of techniques will be based on a compromise between apparent validity, likely acceptability to teachers and pupils, suitability for testing a particular point, item time/efficiency ratio and power of discrimination.

All materials will be tried out in draft form, the results analysed, and the materials revised and tried out again, as proves necessary, before final standardisation.

FINAL PUBLICATION

It is hoped that the tests and an accompanying manual will be published in due course.

RELEVANT PUBLICATIONS

The Certificate of Secondary Education: an introduction to some techniques of examining (Exam. Bulletin 3), H.M.S.O., 1964.
The Certificate of Secondary Education: an introduction to objective-type examinations (Exam. Bulletin 4), H.M.S.O. 1964.
R. Lado, *Language Testing*, Longmans £1.75.
R.M. Valette, *Modern Language Testing,* Harcourt, Brace & World.
N. Brooks, *Language and Language Learning,* Harcourt, Brace & World (Ref. Chapter 15).
W.M. Rivers, *Teaching Foreign Language Skills,* Univ. of Chicago Press, 1969, £3.37½ (Ref. Chapter 12).
W.F. Mackey, *Language Teaching Analysis,* Longmans. (Ref. Chapter 16).
MLA-Cooperative Foreign Language Tests in French, German, Italian, Russian and Spanish.
Modern Languages: Teaching and Testing. Filmstrip and work kit developed by the Modern Language Association of America and the Co-operative Test Division, Educational Testing Service, Box 999, Princeton, New Jersey 08540.

The results of early work carried out in this field by the director of the project are described in:

(a) *Modern Languages,* Vol. XXXII No. 2.

(b) *The British Journal of Educational Psycology* Vol. XXI pp 156–158.

The tests were published as "Standardised French Tests" T.S. Percival. ULP 1951.

There is an extensive range of works on measurement theory and in the field of linguistics which impinge on this work. Fuller bibliographies are available from the Centre for Information on Language Teaching, State House, 62 High Holborn, London WC1R 4TN.

FURTHER INFORMATION from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

APRIL 1971

RESEARCH INTO CSE EXAMINATIONS

DIRECTOR: Mr. D. Nuttall

LOCATION: National Foundation for Educational Research, The Mere, Upton Park, Slough, Bucks.
Telephone: Slough (75) 28161

DURATION: 1969–1974 **AGE RANGE:** 15–16+ **GRANT:** £96,000

AREA OF ENQUIRY

Previous research into the Certificate of Secondary Education undertaken by the NFER on behalf of the Schools Council has aimed to inspect and report the degree of comparability of grade standards between CSE boards, and the extent of overlap between the CSE and GCE grades (see Monitoring Procedures for CSE). The aim of this study is to increase the experience of research among the CSE boards, improve the quality of examinations, and lead to an increase in quantity of information available about CSE examinations.

PROCEDURE

The study is divided into four main sections:

The Reliability and Question Analysis Study is geared to giving an indication of how reliable the written examination papers are and how each question works in practice – how difficult it is, how well the markers spread the marks and how effectively the question discriminates between the candidates who did well on the whole examination and those who did less well. Each CSE board provides the NFER with a sample of marked scripts and details of mark schemes in specific subject areas, and the marks are coded and analysed by computer. The results are returned to the boards.

The Meaning of Grades Study aims at helping to define CSE grades in terms of the standard of attainment expected of candidates at different grade levels. Using information from the Reliability and Question Analysis Study in Mathematics, questions are being categorised both by topic and by the efficiency with which they discriminate between candidates at adjacent grade levels.

The Content Validity Study is concerned with the planning of examinations. Materials are being prepared which aim to help subject panels to be more specific about what their examinations are trying to assess. It is hoped this will lead to the construction of examinations according to prepared "blue-prints", which will specify not only the content of the examinations but also the emphasis to be given to behaviours such as recalling facts and carrying out calculations, and understanding principles.

General Consultation. Technical and statistical advice and assistance is given at the request of boards carrying out their own research and development.

FINAL PUBLICATION

A research report will be prepared in due course.

RELEVANT PAPERS AND PUBLICATIONS

Schools Council *The 1965 CSE Monitoring Experiment* (Working Paper 6) HMSO, 1966, 45p.
Schools Council *The 1966 CSE Monitoring Experiment* (Working Paper 21) HMSO, 1969, 42½p.
Schools Council *The 1967 CSE Monitoring Experiment* (Working Paper 30) Evans/Methuen Educational, 1970, 21p.
Schools Council *The 1968 CSE Monitoring Experiment* (Working Paper 34) Evans/Methuen Educational, 1971, 42p.
D. L. Nuttall & A. S. Willmott, *British Examinations: Techniques of Analysis,* NFER, Autumn 1971.

FURTHER INFORMATION is available from the project director, or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

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GCE EXAMINING AT ORDINARY LEVEL

DIRECTOR: Mr. A.S. Willmott

LOCATION: National Foundation for Educational Research, The Mere, Upton Park, Slough, Bucks.
Telephone: Slough (75) 28161

DURATION: 1970–1973 **AGE RANGE:** 15–16+ **GRANT:** £45,000

AREA OF ENQUIRY

The Schools Council report *Examining at 16+* which was concerned with the relationship between the examinations for CSE and GCE O-level, recommended a programme of research which would seek to increase the knowledge of those characteristics of the two examinations which are relevant to the design of grading systems or other methods of describing calibre of performance, with particular reference to the levels of reliability and validity of the examinations. Since the NFER had already been commissioned to carry out such research into CSE examinations (q.v.) it seemed that concurrent research into GCE O-level would be profitable.

PROCEDURE

The project is concentrating on studies dealing with various aspects of the reliability and validity of GCE O-level examinations. Work is only now underway on the reliability of these examinations mainly because the presence of question choice invalidates most traditional methods and formulae. It is possible to consider the combinations of questions chosen within papers however, and then to apply traditional methods for calculating reliability. Preliminary evidence has in fact suggested that the questions chosen by a candidate may crucially affect his final grade.

The work on the validity of GCE O-level examinations will be centred on the subject panels of individual boards and the aims will be to get the examination constructors thinking critically of their methods of examining. After attempting to set up an ideal specification, it is hoped to see how well this ideal is met under real conditions. By combining the evidence of the "combination" analyses above and the validity studies it is hoped to see whether the content of a question - in terms of educational objectives – is systematically related to its difficulty or to the extent to which it discriminates among pupils, and whether the most popular combinations of questions are largely those requiring, say, only factual recall of knowledge.

Another aspect of the validity investigation will involve taking a paper prepared by one board and inviting members of other boards to classify each question according to an agreed Taxonomy of Educational Objectives.

Many GCE boards have their own research staff and contact is being maintained with them to avoid duplication of effort.

FINAL PUBLICATION

A research report will be prepared in due course.

RELEVANT PUBLICATIONS

Schools Council *Examining at 16+*, HMSO, 1966, 12½p.
D.L. Nuttall and A.S. Willmott, *British Examinations: Techniques of Analysis*, NFER, autumn 1971.

FURTHER INFORMATION is available from the project director, or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London, W1N 6LL.

APRIL, 1971

104 R

SIXTH FORM SURVEY

DIRECTOR: **Miss R. Morton-Williams**

LOCATION: Office of Population Censuses and Surveys (until May 1970 known as the Government Social Survey),
Atlantic House, Holborn Viaduct, London EC1 **Telephone**: 01–583 8937

DURATION: 1966–1970 **AGE RANGE**: 16–20 **GRANT**: Nil*

AREA OF ENQUIRY

The proposal for a research project arose from a concern over ways in which sixth forms might best develop to meet the needs of the increasing numbers of pupils staying on at school. The survey set out to discover:

1. What types of full-time courses 16–19 year olds were taking in both school sixth forms and colleges of further education and the objectives sixth form pupils and teachers were aiming to achieve
2. What kind of pupil (in terms of educational and social backgrounds and future aspirations) was taking each course
3. The attitudes towards their courses of sixth form teachers and pupils and of students in further education

It was estimated that, at the time of the enquiry, of the total population in the 16 to 18 age group, 11% were in school sixth forms, while 4% were taking full-time non-advanced courses in the further education system.

PROCEDURE

The survey was carried out in three phases.

In phase 1, sixth form pupils, sixth form teachers and Heads were interviewed, during the Spring of 1967. A sixth form pupil was defined as a pupil in the sixth form or equivalent of secondary school or in his sixth or subsequent year of secondary education (or the eqivalent year, if his secondary education started other than at the age of 11). The survey consisted of interviews with 4,377 pupils, 153 Heads and 1,149 teachers from a random sample of 154 schools, including independent, direct grant, grammar, technical, and comprehensive. Secondary modern schools were excluded because only 3.1% of pupils aged 16 or over were in secondary modern schools and these were scattered through many sixth forms.

Phase 1. The results of phase I of the Survey have been published as *Schools Council Sixth Form Survey: Volume I: Sixth Form Pupils and Teachers.*
Information obtained includes pupils' attitudes to the sixth form and to their sixth form courses, including impressions of the sixth form, what they saw as objectives of sixth form education and their satisfaction with school provision, and preparation for careers.

Teachers' views about sixth formers are also included, with details of what in their view are the benefits and objectives of sixth form education and sixth form subject teaching. Sections are also included on sixth formers who were not aiming at university entrance, and on specialisation and arts/science differences.

The survey found that about 40% of sixth formers were not planning to go to university, and yet courses being taken by these pupils tended to be based on O- and A-level work. 30% of sixth formers were taking 2 A-levels, 45% 3 or more A-levels, and 90% were planning to obtain further qualifications of some kind. Many teachers favoured broader courses, half suggesting courses with a vocational or practical application; three quarters of the teachers considered some pupils would be better suited to courses other than A-level. There was little agreement among sixth formers on the degree of specialisation desirable.

General characteristics of the sixth form included better staff-pupil relationships, and increased freedom and independence.

Phase 2A consisted of interviews conducted in 1968 with 4,540 full time students on non-advanced courses in 131 colleges of further education. The results have been published as *Schools Council Sixth Form Survey: Volume II: Students in Full-time courses in Colleges of Further Education.* This report contains information gathered on the background and aspirations of students; examinations taken at school and courses and examinations at college; students' opinions on colleges, general or liberal studies, private study, careers and career advice; and characteristics of the students' parents.

More than half of the students in the sample were girls, and 94% of all students were on full-time courses of a year or more's duration. 79% of boys and 55% of girls intended to go on studying when their current course was completed. The most commonly held objective of college education was to make sure they did as well as possible in examinations. Students tended to be highly motivated, satisfied with college-life and the opportunities offered, and to work harder than they did at school.

Phase 2B was concerned with the interviewing in 1968 of a random sample of 3,062 young men and women who had attended the sixth forms of 154 schools, and had left during the academic year 1965–1966. This survey has been published as *Schools Council Sixth Form Survey: Volume III: Sixth Form Leavers,* and contains data on examination achievements with which sixth formers left school and on the types of employment they subsequently entered. In addition, they were asked to give their views on sixth form courses in the light of their experience since leaving school.

*Government Social Survey enquiries are not charged to the Council's budget.

Two-thirds of the leavers were still in full-time education, and a third in full-time employment. On the whole, those who had left recently and those still in the sixth form agreed on the important objectives of sixth-form courses; a high percentage of both attached importance to learning how to study on their own and to being given information about further education and careers. More pupils than leavers felt courses should be designed to enable pupils to do well in exams. More leavers than pupils felt current affairs and other non-examination subjects should be part of the sixth form course.

As with the sixth-form survey, there was little agreement amongst leavers on the width of courses taken in the sixth form.

PUBLISHED REPORTS

Schools Council Sixth Form Survey: Volume I: Sixth Form Pupils and Teachers, Books for Schools, 1970. £3.50 (+ 30p. postage and packing).
Schools Council Sixth Form Survey: Volume II: Students in Full-time Courses in Colleges of Further Education, Books for Schools 1970. £2.50 (+ 30p. postage and packing).
Schools Council Sixth Form Survey: Volume III: Sixth Form Leavers, Books for Schools. £1.50 (+ 25p. postage and packing).
All three obtainable from Councils and Education Press Ltd., 10 Queen Anne Street, London W1M 9LD.

FURTHER INFORMATION

Copies of these reports are available for reference only in the Schools Council Information Centre. Further information from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL

82% of leavers had spent two or three years in the sixth-form and had taken A-level examinations in at least two subjects.

INVESTIGATION INTO SUPPLEMENTARY PREDICTIVE INFORMATION FOR UNIVERSITY ADMISSION

CO-ORDINATOR: Mr. A.B. Sainsbury

LOCATION: Committee of Vice-Chancellors & Principals, 30 Maple Street, London, W.1. **Telephone:** 01–636 6380

DURATION: 1966–1974 **AGE RANGE:** 16–18 **GRANT:** £73,750 (+ £73,750 from the DES)

AREA OF ENQUIRY

The project was established in 1966 with a joint grant from the Schools Council and the Department of Education and Science at the suggestion of the Committee of Vice-Chancellors and Principals. The intention was to implement the two related recommendations made by the Robbins Committee about the selection of candidates for admission to university – that schools and universities should consider how school reports on candidates might best contribute to the process of selection and that an enquiry should be made into the assessment of their aptitude for academic work. The investigation is concerned essentially with the possibility of providing supplementary information to augment that at present provided by GCE and similar examination results, school reports and interviews. The largest part of the work is concentrated upon the design, testing and experimental use of a test of academic aptitude within the United Kingdom, and the investigation of its predictive value in terms of first year and degree results in various subjects in various universities. Some follow up work has also been attempted in colleges of education.

Although the main value of such a test is generally thought to be its predictive powers, the project has not lost sight of the educational value that such a test might have in reducing the predictive load at present placed on existing school leaving examinations, and is also aware that the test might well provide a useful extra-curricular calibrating instrument of especial value in a period of educational change.

PROCEDURE

In the original devising of aptitude tests, the project received initial assistance from Professor Oliver of Manchester University, who offered the use of his own version of an aptitude test that he had constructed on the American SAT model and had already tried out in a number of English sixth forms. (See Follow-up Study of Pupils into Institutions of Higher Education). It was decided that the project tests should be called tests of academic rather than scholastic aptitude and that they should be constructed so as to examine two aspects of generally developed abilities - the quantitative and the verbal. The project directorate was conscious of the danger of seeming to test attainment rather than aptitude, especially in the mathematical area, and care was taken to ensure that the test items required a mathematical knowledge within the compass of students on the Arts side as well as those specialising in the Sciences.

Four tests have been administered. The first, in October 1967, was taken by approximately 31,000 fourth-term sixth-formers, whether or not they were applying for a university place and by about 4,000 applicants for admission to the University of Oxford, as well as by a small pilot sample of 2,500 freshly admitted undergraduates. The second, constructed of items pre-tested in 1967, was taken in 1968 by 18,000 fourth-term sixth-form applicants through UCCA and by about 2,500 applicants to Oxford. The third test, in 1969 was taken by some 15,000 university applicants in a wide sample of schools, colleges and technical institutions in the United Kingdom and the fourth, in 1970, by some 5,000 candidates drawn from a smaller range of institutions.

In each case, candidates have been asked to provide the minimum of biographical information and schools have been asked for a rough assessment of the academic aptitude of their pupils.

The validation of the first three tests is being undertaken by the School and University Research Unit, under the directorship of Dr. Bruce Choppin, at the National Foundation for Educational Research. The tests are being validated against the GCE results of candidates and against their progress at various stages through their higher education.

So far as the second recommendation is concerned, two experimental structured report forms have been devised and were completed in 1968 and in 1969 by samples of schools. Some difficulty was experienced in securing sufficient support in the schools for the circulation of an experimental report on a candidate at the same time as the completed UCCA form which was the procedure eventually recommended by university selectors. This part of the project's work has therefore been limited to an analysis of existing data.

FINAL PUBLICATION

The National Foundation for Educational Research will report periodically over the next two years to the Admissions Project Committee. This body will report to the Committee of Vice-Chancellors and Principals and will keep the DES and Schools Council informed of progress.

FURTHER INFORMATION from the project co-ordinator, or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

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FOLLOW-UP STUDY OF SIXTH FORM PUPILS INTO INSTITUTIONS OF HIGHER EDUCATION

DIRECTOR: Professor R.A.C. Oliver **RESEARCH ASSOCIATE:** T. Christie

LOCATION: Department of Education, University of Manchester, Manchester M13 9PL.
Telephone: Manchester (061)-273 3333

DURATION: 1967–1970 **AGE RANGE:** 16–18 **GRANT:** £3,000 (+ £3,000 from DES)

AREA OF ENQUIRY

In 1962 Professor Oliver suggested in an article in *Universities Quarterly* that a scholastic aptitude test might be used in the selection of applicants for admission to British universities. Such a test, known as the Oliver S.A.T. and modelled on the American Scholastic Aptitude Test of the College Entrance Examinations Board, was administered to boys and girls in a sample of schools in England and Wales during the Summer term of 1965.

In 1966 the Committee of Vice-Chancellors and Principals set up a four-year project (later extended to finish in 1974) funded by the DES and Schools Council and designated an Investigation into Supplementary Predictive Information for University Admission (q.v.) to construct and test an experimental test to be known as a Test of Academic Aptitude. It was agreed that preliminary indications of the ability of a test of scholastic or academic aptitude to predict the degree of success at university might be obtained by a follow-up study of the sixth formers who had taken the Oliver S.A.T. in 1965, some of whom would be graduating in 1968, and this research project was accordingly set up.

PROCEDURE

All examination centres entering candidates for GCE A-level examinations conducted by the Joint Matriculation Board in 1964 were sent a questionnaire about their sixth forms, and from the 569 schools responding a stratified sample of 28 schools was selected, representing boys', girls' and mixed schools; grammar, technical and secondary modern schools; independent, aided, direct grant and maintained schools.

The Oliver Scholastic Aptitude Test was administered to sixth form pupils in these schools in the summer term of 1965.

In the winter term 1967 each school was asked to report on the destinations of the students. An operating sample of 1377 pupils was obtained for whom both post-school destinations were known and the S.A.T. scores were available. 41.46% were at university, 23% at colleges of education, 6.39% taking a degree/or HND course, 8.35% in other further education, and 20.78% in employment.

CONCLUSIONS

A detailed analysis of the data of the university sample leads to the conclusion that the outcomes (in terms of degree class) of selection procedures involving S.A.T. are essentially equivalent to the outcomes of present selection procedures. This implies that the candidates who would be selected through the S.A.T. would be of commensurate calibre with the candidates at present selected. There is at the moment no reason to suppose that the present methods and those utilizing S.A.T. are not interchangeable. Only the operational use of S.A.T. or T.A.A. could test this hypothesis, or show how a combination of S.A.T. with present procedures might improve selection.

PUBLICATION

A research report has been prepared and submitted to the Schools Council with a view to publication.

FURTHER INFORMATION from Mrs. Gillian Box, Schools Council, 160 Great Portland Street, London, W1N 6LL.

SIXTH FORM CURRICULA AND THE ACADEMIC REQUIREMENTS OF OXFORD AND CAMBRIDGE

DIRECTOR: Sir Desmond Lee

LOCATION: University College, Cambridge CB3 9BB Telephone Cambridge (0223) 64811

ASSISTANT DIRECTOR: Dr. Bowen, University of Oxford (until May 1970)

DURATION: 1968–1971 **AGE RANGE:** 16–18 **GRANT:** £22,350

AREA OF ENQUIRY

The purpose of this investigation is to examine over as wide a field as possible (and in particular in subjects where university work directly continues sixth form work) the curricula of those sixth form pupils who intend to go to university, and to study the relation of those curricula a) with the scholarship and entrance examinations set by the colleges at Oxford and Cambridge and b) with the courses such pupils will take when they reach the two universities (in subjects where this is relevant).

PROCEDURE

The main concern of this research project has been to establish statistical procedures for analysing the annual entry to Oxford and Cambridge in such a way that the Admissions Offices of the two universities are able to accept them as part of their regular routine. The project's work has fallen into two main sections – statistical and curricular.

Statistical

An annual analysis of the entry to Oxford and Cambridge has been carried out by the two University Admissions Offices in a form devised by the project, and it has been agreed that the Offices will produce a statistical report in this form each year. In addition the GCE, college examination and degree examination results for the whole of the 1966 entry to Oxford and Cambridge have been compared and analysed, and the results submitted to the Schools Council.

The project has also undertaken statistical work for the Working Party on the Cambridge Colleges Joint Examination.

Curricular

The relations between school and university curricula are beyond the scope of a small project, but through the Working Party on the Cambridge Colleges Joint Examination, of which the project director is a member, it is hoped that the entrance examinations to Oxford and Cambridge will be revised to reflect to a greater extent the changing pattern of sixth form curricula.

PUBLICATIONS

A survey of the information available on admissions and awards at Oxford and Cambridge was produced in July 1969. It deals mainly with the years 1965–69, but comprises also such information as is available for earlier years.

An analysis of the performance of 1966 entrants to Oxford and Cambridge, from GCE and scholarship results to degree results, was produced in March 1971. It is hoped to supplement this analysis with further information from the 1967 entrants.

Circulation of these two documents is limited, but a copy of each is available for reference only in the Schools Council Information Centre.

A final report, including data from the above papers, is currently being prepared for submission to the Schools Council.

FURTHER INFORMATION is available from Sir Desmond Lee or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

SIXTH FORM CURRICULUM AND EXAMINATIONS

DIRECTOR: Mr.W.A.Reid

LOCATION: School of Education, University of Birmingham, P.O. Box 363, Birmingham 15.
Telephone: Birmingham:(021)–472 1301

DURATION: 1969–1971 **AGE RANGE:** 16–18 **GRANT:** £21,250

AREA OF ENQUIRY

This research project is one of two set up at the suggestion of the Schools Council's Sub-Committee on Sixth Form Curriculum and Examinations (see also Relationship of Sixth Form Curricula and the Academic Requirements of Oxford and Cambridge. The initial grant was to aid the establishment of a Sixth Form Curriculum Development Group at Birmingham University, which was to involve a wide range of university and school teachers and work in co-operation with the Joint Matriculation Board.

The main purpose of the research is to formulate and assess some possibilities for the future by examining the relationships between the structure of the sixth form curriculum, the educational needs of sixth formers and the needs of the universities as expressed in sixth form examinations and the course requirements of university facilities and departments. It also includes a consideration of the curricula patterns which are likely to emerge in the near future, the general problems of innovation in the sixth form in relation to the schools and universities, and specific problems of adapting to a particular new curriculum.

PROCEDURE

170 schools of all types in the West Midlands and North-West are participating in the project's work.

The project has concentrated to date on three main areas of research:

Admissions survey. The object of this exercise has been to look at the way in which the sixth form curriculum is related to university entrance procedures and requirements. A questionnaire survey of 135 university faculties and departments in the Midlands and North was undertaken, and data was obtained on admissions procedure and criteria, and attitudes to A-level examinations and proposed changes in the sixth form curriculum.

A parallel questionnaire survey of head teachers and heads of departments in the 170 co-operating schools was also undertaken.

Survey of teachers' aims for Sixth Form Education

This survey has gathered information on the type of curriculum which teachers regard as best suited to the needs of sixth formers; on the relationship between their opinions on this and their perception of the general aims of sixth form education; on the practical difficulties inherent in implementing new curricula; on the extent to which the content of the school curriculum is influenced by the demands of universities; and on the changes already taking place in the character and composition of sixth forms and in the organisation of their curricula.

The information was gathered largely by means of questionnaires and interviews, and a conference on sixth form education for participating schools was held in November 1969.

Curriculum components survey

As a preliminary step towards a study of the whole curriculum, a number of studies in particular subject areas, in the first instance history and physics, have been designed in order to produce some empirically based evidence about the nature of sixth form studies and the demand for them. Surveys are being conducted of comparatively small numbers of teachers, university lecturers, students in higher education, and employers of young men and women with A-level qualifications to answer questions on the relevance of sections of A-level syllabuses; the aims of subject teachers and the constraints which make these aims difficult to realise; the relative contributions that can be made by the disciplines to general and to specialist education, etc.

FINAL PUBLICATION

The project is producing a series of reports on sixth form curriculum for submission to the Schools Council. The first of these: *Report Number 1: the Universities and the Sixth Form Curriculum* should be available early in 1972. It is concerned with the demands of higher education and the influence of selection procedures for entry to universities upon upper secondary education.

RELEVANT PAPERS AND PUBLICATIONS

Bulletin to Schools. 4 issues to date – February 1970, June 1970, November 1970, March 1971 (this issue contains a summary of Report No.1). These bulletins, principally intended for schools participating in the project, are not generally available. Copies are available for reference only in the Schools Council Information Centre.

FURTHER INFORMATION is available from the project director or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

N.B. Arising out of the work of this project, a joint proposal by the University of Birmingham and the Joint Matriculation Board for research and development work in Syllabus Construction and Examining Techniques for Advanced Work in sixth forms has been approved by the Schools Council. The project, to be directed by Mr. W.A.Reid at Birmingham School of Education, is to run from 1971–1973 at a cost of £22,183.

APRIL 1971

THE RELIABILITY OF GCE EXAMINATIONS

DIRECTOR: **Mr. J.K. Backhouse**

LOCATION: Department of Educational Studies, Oxford University, 15 Norham Gardens, Oxford OX2 6PY.
Telephone: Oxford (0865) 54121

DURATION: 1969–1970 **AGE RANGE:** 16–18+ **GRANT:** £400

AREA OF ENQUIRY

Conventional formulae for estimating the reliability of an examination are appropriate to papers in which there is no choice of questions. This project is concerned with the development of formulae for estimating the internal consistency of examinations when choice of questions is allowed.

PROCEDURE

A number of formulae have been obtained based on different assumptions. Because of the complicated nature of the formulae some tentative approximations have been suggested, and one of the main objectives of the research has been to evaluate the usefulness of these approximations. The other main objective has been to obtain values for the reliability of a range of papers and subject examinations at both O-level and A-level.

PUBLICATION

The results of the research will be incorporated in *British Examinations: Techniques of Analysis,* by D.L. Nuttall and A.S.Willmott, with contributions by J.K.Backhouse & R.B. Morrison, to be published by the NFER in the autumn of 1971.

FURTHER INFORMATION is available from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

PREPARATION, ASSESSMENT AND SELECTION OF SIXTH-FORMERS FOR UNIVERSITY: A SURVEY OF CURRENT PRACTICES IN OTHER COUNTRIES

DIRECTOR: Dr. W.D.Halls **RESEARCH FELLOW:** Mr. A.G.Hearnden

LOCATION: Department of Educational Studies, 15 Norham Gardens, Oxford. **Telephone:** Oxford (0865) 54121

DURATION: 1969–1970 **AGE RANGE:** 16–18 **GRANT** £5,423

AREA OF ENQUIRY

The research was commissioned to provide the Schools Council's Sixth Form Working Parties with information on the preparation of young people for University, in respect of school organisation, curriculum content, methods of assessment and admissions procedures. The survey was to be restricted to five countries – USSR, USA, France, West Germany and Sweden – and an indication of general trends was to be discussed in terms of their possible relevance to the United Kingdom.

PROCEDURE

The first part of the research was concerned with an analysis of the education system in the five countries with particular reference to the areas outlined above. In each case a survey was made of the school system, terminal examinations and university admissions. The second part involved a comparative analysis of these five countries, with particular reference to current practice in England and Wales. This was done in four areas: lower secondary, upper secondary, assessment and university admissions.

CONCLUSIONS

An accurate account of current practice in the five foreign countries surveyed is greatly facilitated by the national or State authorities. The absence of standard curricula in England and Wales makes direct comparisons difficult since it is not possible to gauge the extent of variations between individual schools. This reservation should be borne in mind in considering conclusions.

At the *lower secondary level* segregation into different types of school can mean in practice segregation according to different curricula. While there is general and increasing support for the type of system which eliminates this kind of selectivity, it is counterbalanced by decreasing adherence to principles of total mixed ability grouping in those countries where a non-selective pattern is already firmly established. If any general trend is discernible in the countries studied it is towards a situation in which the significant groupings are based on the choice of the additional optional courses made available to pupils.

At the upper secondary level all countries have experienced a significant increase in numbers. This has produced a much more heterogeneous clientele than was traditionally catered for in academic courses. The curricula problems are in a way the reverse of those experienced in England. There is a conflict between the desire to retain the broad range of studies, embracing both humanities and scientific disciplines, traditional in the French lycée and the German gymnasium, and a growing pressure towards specialisation which is accounted for by a number of factors connected with the growth in demand for higher education. Thus while England is trying to broaden the upper secondary curriculum other countries are trying to narrow it down. In the countries surveyed the practice is invariably to have a common core of studies, trying to keep all categories of pupil together for as much of this as possible, together with a choice of optional specialisms, allowing scope for a degree of 'study in depth'. There is a strong measure of consensus about the components of the common core and increasing imaginativeness in the suggestions for specialising.

As regards *assessment* a critical review is given of the various methods currently in use, explaining the background against which their success must be judged. In addition to conventional written examinations, these include continuous or internal assessment, objective testing of achievement, oral examining and the 'examen bilan', a kind of balance-sheet concept which is not merely an aggregate of marks but rather a kind of profile of the individual which it is possible to use constructively in career guidance. Some of the research in this field suggests that information about performances in non-specialist subjects is extremely relevant to the task of identifying the abilities required of prospective university entrants. In England the initiative for developing new methods of assessment has lain largely with examination boards. See also Supplementary Predictive Information for University Admission (q.v.)

The growth of numbers of applicants for *university admission* has created widespread problems. While in the United States universal post-secondary education may seriously be envisaged as an objective for the 1970s, for Europe such a concept is still beyond the boundaries of practical possibility. In Western European countries the final school leaving certificate, baccalaureat, abitur etc., has always fulfilled the function of a university entrance qualification conferring an automatic right of entry to any faculty. The expansion of upper secondary education has thrown admission procedures of this nature into disarray. But established traditions are difficult to change and the restriction of available places to a fixed number is bitterly opposed by students. The USSR provides an example of the opposite extreme to a free entry system in that all admissions are regulated in accordance with national man-power requirements. The problem is related to that of the structure of higher education and in this context it is interesting to note that France and Germany are both moving towards a three-tier system in which a two year foundation course leads to an intermediate qualification, followed by two years to a kind of masters' degree and a further two years for research training.

FINAL PUBLICATION A research report has been submitted to the Schools Council with a view to publication.

FURTHER INFORMATION Is available from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

APRIL, 1971

THE OPERATION OF THE NUFFIELD A-LEVEL CHEMISTRY EXAMINATION

DIRECTOR: Mr. J.C. Mathews **RESEARCH OFFICER:** Mr. J.R. Leece

LOCATION: Department of Educational Research, University of Lancaster, Cartmel College, Bailrigg, Lancaster.
Telephone: Lancaster (0524) 65201.

DURATION: 1970–1973 **AGE RANGE:** 16–18 years, **GRANT:** £6,000 (+ £600 from Nuffield Foundation)

AREA OF ENQUIRY

The examination in Nuffield A-level Chemistry (q.v.) introduced assessment techniques new to science examinations at this level: objective tests, structured questions, multiple impression marking, and the internal assessment of practical work. These techniques were developed during the two years of the project trials, but it has not yet been determined how effective they are when operated on a larger scale within the national system of examinations.

The new techniques are accompanied by quantative specifications of examination objectives, making possible, for the first time at this level, the use of student attainment in examinations to determine how far the objectives of the course are being achieved. This will involve a detailed analysis of student performance in the various dimensions of the examination specifications.

It is hoped that the research, in addition to its immediate value in monitoring attainment of the objectives of the Nuffield A-level Chemistry Course, will give rise to two other important outcomes:

1. An improvement of assessment techniques

2. A pilot study of the way in which examination performance can be used to monitor curriculum design

PROCEDURE

The work will fall into two main parts:

1. **The investigation into the operation of internal assessment of practical work.**
   This will include an investigation into a) methods of assessment within all schools engaged in the teaching of Nuffield A-level Chemistry (approximately 60 at present) and b) methods of moderation applied by the University of London Schools Examining Department which has been examining the trial school candidates.* At present the marks awarded by teachers for practical work are subject to moderation which depends on the performance of teaching sets in those questions in the written papers which are based on practical work. There are several possible variations of this moderating procedure and it is proposed to determine the effect of these various moderations on the final mark awarded for practical work.

2. **The investigation into the written examination.**
   Paper 1 is an objective test of 50 items. Paper 2 consists of structured questions requiring about 50 short responses which are marked from a detailed mark scheme. Paper 3 consists of a choice of questions requiring a free response; the answers are marked by impression by at least two examiners. As a result of an investigation into such things as 'relative attainment in the themes and topics of the course' and 'relative attainment in the educational objectives of the course', it is hoped to provide a detailed statement of the attainment of objectives of the Nuffield course and to make suggestions for monitoring procedures which may be generally adopted for examinations of this type at this level. It is also expected that a statement will be made about examination techniques at this level with suggestions for their refinement.

FURTHER INFORMATION is available from the project director or from Mrs. Gillian Box, Schools Council Information Centre, 160 Great Portland Street, London W1N 6LL.

**The University of London Entrance and School Examination Council are providing facilities for the abstraction of data from the scripts and from their records, and are also providing some computing facilities.*

APRIL 1971

G.C.E. A–LEVEL COMPARABILITY IN MATHEMATICS

DIRECTOR: Professor D.B.Scott **STATISTICAL CONSULTANT:** Professor J.F.Scott

LOCATION: School of Mathematical and Physical Sciences, University of Sussex, Brighton
Telephone: Brighton (0273) 66755

DURATION: 1969–1971 **AGE RANGE:** 18 Years **GRANT:** £5,000

AREA OF ENQUIRY

The project was commissioned on the recommendation of the Schools Council Working Party on A-level comparability and by the Mathematics Committee to compare, over a period of two years, the possible variations in standards of assessment at A-level of single-subject mathematics by the three examination boards. The recent growth in the importance of the cleaning-up process for university admission, where last minute decisions are necessarily based on the crude evaluation of A-level results, draws attention to the importance not merely of ensuring that there is no discrepancy in standards, but also dispelling any suspicion that there might be.

PROCEDURE

The investigation is limited to three boards. It is intended to enlist the co-operation of a number of schools served by these boards, who would use for the internal examination of their A-level candidates in the preceding Spring term a set of recent examination papers of one or other of these boards. These papers will be marked and graded by the original official examiners, and the results of the candidates in this examination will be compared with the grades they obtain in the Summer A-level examination of their own board. All possible combinations of the three collaborating boards will be used for the internal and external examinations. 36 schools with not less than 12 candidates each are participating in the scheme.

FINAL PUBLICATION

It is hoped that a report containing an analysis of the results will be published in due course.

FURTHER INFORMATION is available from Mrs. Gillian Box, School Council Information Centre, 160 Great Portland Street, London W1N 6LL.